

78-1615

No.

Supreme Court, U. S.
FILED

APR 28 1979

MICHAEL RODAK, JR., CLERK

In the
Supreme Court of the United States

OCTOBER TERM, 1978.

GRAYHILL, INC.,

Petitioner,

vs.

AMF INC. and MICRO-PRODUCTS
ENGINEERING CO.,

Respondents.

**PETITION FOR WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT**

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April 25, 1979.

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IN THE SUPREME COURT OF THE UNITED STATES

October Term, 1979

Docket No.

GRAYHILL, INC.,)
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Petitioner,)
)
vs.)
)
AMF INC. and MICRO-PRODUCTS)
ENGINEERING CO.,)
)
Respondents.)

PETITION FOR WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Petitioner, GRAYHILL, INC., prays that a writ of certiorari issue to review the judgment order of the United States Court of Appeals for the Third Circuit entered January 25, 1979.

OPINIONS BELOW

The judgment order of the United States Court of Appeals for the Third Circuit for which review is sought is unreported and is reprinted in the Appendix hereto at pages 1a-2a. The unreported Opinion, Findings of Fact and Conclusions of Law of the United States District Court for the District of New Jersey dated December 28, 1977 are reprinted in the Appendix at pages 3a-98a.

JURISDICTION

The jurisdiction of this Court is invoked under 28 USC 1254(1). The judgment order of the Court of Appeals was entered on January 25, 1979.

QUESTIONS PRESENTED

1. Is "synergism" a sine qua non to patentability of an invention under 35 USC 103?
2. In the absence of a prior art teaching of the claimed combination, is piece part selection from prior art combinations in accord with the "subject matter as a whole" requirement of 35 USC 103?
3. Does a generically defined element in a claimed combination cover a species of that element?
4. Are independent design and experimentation the proper tests for determining whether or not corrections can be made to the drawings as originally filed?

STATUTES INVOLVED

35 USC 103 Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

35 USC 112 Specification, first paragraph

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

STATEMENT OF THE CASE

This case was commenced in the District of New Jersey by a complaint filed by Grayhill, Inc. (hereinafter sometimes referred to as petitioner) against AMF Inc., charging infringement of U.S. Patent 3,958,090 by the RCL Electronics division of AMF. The complaint was amended to include Micro-Products Engineering Co. as a co-defendant with AMF Inc. (both of which are sometimes hereinafter referred to as respondents) on the basis the switch charged as an infringement was made for AMF by Micro-Products.

Respondents denied infringement, challenged validity of the patent on a number of grounds and counterclaimed seeking a declaratory judgment that the patent be declared non-infringed, invalid

and unenforceable, charged petitioner with unfair competition on the ground that petitioner allegedly harassed customers of respondents, and charged petitioner violated the antitrust laws on the basis petitioner allegedly committed fraud on the Patent Office.

The District Court found the patent to be invalid and not infringed and that petitioner was not guilty of unfair competition or violation of the antitrust laws. The District Court further held that respondents were not entitled to attorneys' fees under 35 USC 285.

Petitioner appealed the District Court's findings that the patent was invalid and not infringed, while respondents appealed the failure of the District Court to grant attorneys' fees under 35 USC 285.

The District Court's decision was embodied solely in its lengthy Opinion, Findings of Fact and Conclusions of Law dated December 28, 1977 and amended on February 9, 1978. (App. 3a-98a)

The Court of Appeals affirmed the judgment of the District Court without opinion. (App. 1a-2a)

The petition is directed solely to the patent validity and infringement issues.

The patent in suit was granted to petitioner on May 18, 1976 on an application filed December 18, 1974 for a DIP switch.*

The patented DIP switch was invented by Ricardo Garcia over a period of a little more than six months between November, 1972 and May, 1973. Following the production of prototype models, the switch was extensively tested over about a six-month period of time between October, 1973 and March, 1974. Production switches were thereafter made and first shipped in November, 1974.

The Garcia patent No. 3,958,090 was applied for on December 18, 1974. During the prosecution of petitioner's patent application, amendments** proposed by petitioner were approved by the Patent Office, resulting in the granting of the patent on May 18, 1976.

By the end of 1976, petitioner sold over three million switches in a highly competitive market.

* "DIP", an acronym for "dual in-line package", is a term applied to a line of standardized electrical components used in electronic circuitry assembled on printed circuit boards. The patent discloses and claims a miniature electrical switch of the DIP configuration useful in controlling circuits on printed circuit boards.

** For the drawings, specification and claims.

Respondent AMF copied petitioner's switch by commissioning a consultant electrical engineer to prepare a set of production drawings from an actual sample of petitioner's switch so that respondent AMF could make and sell a switch identical to that sold by petitioner. Although warned by Grayhill that a patent would be granted on its switch, AMF ignored the warning and proceeded to manufacture and sell the switch.

REASONS FOR GRANTING THE WRIT

1. The Third Circuit Court of Appeals Failed to Exercise Proper Appellate Supervision.

The Third Circuit Court of Appeals, in summarily affirming the lower Court's decision (App. 1a-2a), improperly sanctioned a departure from the accepted usual course of judicial proceedings by the lower Court.

The lower Court, in conflict with its own circuit and other circuits, erred as a matter of law with respect to the interpretation of 35 USC 103, 35 USC 112, and the accepted laws of claim interpretation. The Court of Appeals' summary treatment of the lower Court's errors requires this Court to exercise its power of supervision.

2. Synergism Is Not a Sine Qua Non For Patentability Under 35 USC 103.

The Third Circuit Court of Appeals, by affirming the District Court's conclusion of law (App. 90a) that in a combination patent "such a patent must create a synergistic effect, one in which the combination of elements results in an effect greater than the sum of the several elements taken separately" egregiously erred. Thus, the law of this case is in direct conflict with not only the decisions of this Court* but also the decisions of the Third Circuit,** the Seventh Circuit,*** the Eighth Circuit,**** and the

* Sakraida v. Ag Pro, Inc., 425 US 273 (1976); Anderson's-Black Rock v. Pavement Salvage Co., 396 US 57 (1969).

** Hadoo Products, Inc. v. Walter Kidde & Co., 462 F.2d 1265 (3rd Cir. 1972); Systematic Tool and Machine Co. v. Walter Kidde & Co., Inc., 555 F.2d 343 (3rd Cir. 1977).

*** Republic Industries, Inc. v. Schlage Lock Company, 200 USPQ 769, ____ F.2d ____ (7th Cir. 1979).

**** Clark Equipment Co. v. Keller, 570 F.2d 788, 789 (8th Cir. 1978); Reinke Manufacturing Co., Inc. v. Sidney Manufacturing Corp., Appeals Nos. 78-1341 and 78-1301, ____ F.2d ____ (8th Cir. 1978).

CCPA.* Confusion among the Circuits is emphasized by the acceptance of the sine qua non doctrine by the Second and Sixth Circuits.**

Guidance is necessary not only for the several Circuits but also for the Patent Office which is the fount for all patents and which follows the doctrine that synergism is not a sine qua non for determining patentability.***

3. Invalidation of a Patent by Piecepart Selection of Elements from the Prior Art is Contrary to the "Invention as a Whole" Concept Embodied in 35 USC 103.

Graham v. John Deere, 383 US 1, 32 (1966) is controlling on the issue of obviousness under 35 USC 103. The lower Court's reconstruction of the patented invention by selecting and modifying

* In re Kollman, _____ F.2d _____, 422 BNA PTCJ A-4, decided March 15, 1979; In re Huellmantel, 51 CCPA 845, 324 F.2d 998, 139 USPQ 496 (1963).

** Digitronics v. New York Racing Assn., _____ F.2d _____, 193 USPQ 577 (2nd Cir. 1977); Reynolds Metals Co. v. Acorn Bldg. Components, Inc., 548 F.2d 155 (6th Cir. 1977); Phillips Industries, Inc. et al. v. State Stove & Manufacturing, Inc., 522 F.2d 1137 (6th Cir. 1977).

*** Manual of Patent Examining Procedure, Section 706.

elements from prior art devices did not result from the reconstruction of a primary reference. This is improper because the assemblage of secondary references to provide the patented invention requires the use of the invention as part of the prior art.

Confusion exists among courts in determining patentability of combination inventions. Guidance by this Court should be provided to courts for applying the "invention as a whole" concept to combination inventions such as those considered in Anderson's-Black Rock v. Pavement Salvage Co., 396 US 57 (1969), and A & P Tea Co. v. Supermarket Corp., 340 US 147 (1950), where each of the elements of the combination is an entity capable of functioning alone or, as in the case at bar, where each of the elements are components incapable of functioning apart from the combination.

Such was not provided by the Court of Appeals.

4. A Combination Including a Species of an Element Infringes a Claimed Combination in Which the Corresponding Element is Generically Defined.

It is hornbook law that a generic element in a claimed combination covers specific elements in corresponding combinations. The lower Court, while paying lip service to the established law,

contrarily found (App. 83a) that there was no infringement of the claimed combination of the Garcia patent because the conductor terminal elements of the switch charged with infringement were "rigid" (i.e., species) whereas the corresponding elements of the claimed combination were without limitation (i.e., generic). This holding was affirmed without opinion by the Third Circuit Court of Appeals.

This holding is contrary to the well settled law of this Court which holds in Graver Tank & Mfg. Co. v. Linde Air Products, 339 US 605 (1950):

"In determining whether an accused device or composition infringes a valid patent, resort must be had in the first instance to the words of the claim. If accused matter falls clearly within the claim, infringement is made out and that is the end of it."

This improper sanction of a departure from this well settled law should be corrected.

5. The Lower Court Applied Erroneous Legal Tests in Determining the Propriety of Corrections Made to the Drawings.

The Freuhauf and Novelart decisions,* relied upon by the District Court to invalidate the

* Freuhauf Corp. v. International Terminal Operating Co., Inc., 183 USPQ 526 (D NJ 1973), aff'd per curiam, 184 USPQ 266 (3rd Cir. 1974); Novelart Mfg. Co. v. Carlin Container Corp., 363 F. Supp. 58 (D NJ 1973).

Garcia patent on the basis that the original application failed to disclose an operative switch, are irrelevant. Determination of inoperativeness by the lower Court was based upon drafting errors made in the drawings as filed. The tests for determining the propriety for amending the drawings are not whether "independent design and experiments" [used by the lower Court (App. 94a)], would be required to produce an operative switch, but rather whether the amendments constitute new matter.

This Court, in Hobbs v. Beach, 180 US 383 (1901) held amendments to clarify or complete the original disclosure do not constitute new matter. The Second Circuit followed this rule in Triax Co. v. Hartman Metal Fabricators, Inc., 479 F.2d 951 (1973).

The Fourth Circuit in Proctor & Gamble Mfg. Co. v. Refining Inc., 135 F.2d 900 (1943), the Eighth Circuit in H. H. Robertson Co. v. Klauer Mfg. Co., 98 F.2d 150 (1938), and the Court of Customs and Patent Appeals in Quigley v. Zimmerman, 73 F.2d 499 (1934), hold amendments may be made to the drawings or written description in patent applications for the purpose of curing defects obvious to one skilled in the art.

The Second Circuit in Novadel Process Corp. v. J. P. Meyer & Co., 35 F.2d 697 (1929), and the

Sixth Circuit in Michigan Carto Co. v. Sutherland Paper Co., 29 F.2d 184 (1928), support the rule that insertions by way of amendment to the description or drawing, amplifying or explaining what was reasonably indicated to be within the invention will not invalidate a patent.*

The Third Circuit's approval of the clearly erroneous application of the law by the District Court should be rectified.

CONCLUSION

Consistency should be the life of the law. The lower Court's clearly erroneous application of the law compounded by the cavalier treatment afforded petitioner by the Court of Appeals has emasculated this principle and calls for exercise of this Court's power of supervision.

Respectfully submitted,

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* The Third Circuit approved this rule in Hadco Products, Inc. v. Lighting Corp., 312 F. Supp. 1173 (ED Pa. 1970), rev'd on other grounds 462 F.2d 1265.

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 78-1580/81

GRAYHILL, INC., an Illinois corporation,
Appellant, in No. 78-1580

v.

AMF, INC., a New Jersey corporation, and
MICRO-PRODUCTS ENGINEERING CO.,
a New Jersey corporation,
Appellants in No. 78-1581

Appeal From the United States District Court
For the District of New Jersey
D.C. Civil No. 76-0936

Argued January 8, 1979

HUNTER, GARTH, Circuit Judges, and LAYTON,*
District Judge

* Honorable Caleb R. Layton, 3rd, United States District Judge for the District of Delaware, sitting by designation.

JUDGMENT ORDER

After consideration of all contentions raised by appellant, it is

ADJUDGED and ORDERED that the judgment of the district court be and is hereby affirmed.

Costs taxed against appellant in each case.

By the Court,
s/ James Hunter III
Circuit Judge

Attest:

s/ M. Elizabeth Ferguson
Chief Deputy Clerk

Dated: January 25, 1979

Certified as a true copy and issued in lieu of a formal mandate on February 16, 1979.

Test: s/ M. Elizabeth Ferguson

Chief Deputy Clerk, U.S. Court of Appeals
for the Third Circuit

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

GRAYHILL, INC., an Illinois :	
corporation, Plaintiff, :	
v. :	Civil #76-936
AMF INC., a New Jersey :	OPINION
corporation, and MICRO- :	
PRODUCTS ENGINEERING CO., :	
a New Jersey corporation, :	
<u>Defendants.</u> :	

LACEY, D. J.

Plaintiff sues for infringement of its patent. Following trial the parties made post-trial submissions in the form of proposed findings of fact and conclusions of law. As to many of the submissions, there was agreement between the parties. In the Findings of Fact which follow, I have indicated by the word "Stipulated" where this is so.

FINDINGS OF FACT

I. NATURE OF THE PROCEEDINGS.*

1.01 This is an action for infringement of U.S. patent 3,958,090 (the Garcia or '090

* Counsel have been most helpful to the court in arriving at stipulations and relating their analysis of the evidence post-trial to the numbering system used by the opposite party. I have used plaintiff's numbering system simply for the sake of convenience.

patent) (PX 1) entitled Miniature Switch Assembly which issued May 18, 1976 to Ricardo L. Garcia on an application filed December 18, 1974. The '090 patent is assigned to Grayhill, Inc. (GRAYHILL). Ownership of the '090 patent is not disputed. Stipulated.

1.02 The action was initiated by plaintiff GRAYHILL by filing the original Complaint on May 19, 1976, charging defendant AMF Inc. (AMF) with infringement because of the activities of its division, RCL Electronics (RCL). RCL, originally known as RCL Electronics, Inc., was acquired by AMF in November 1974. The Complaint was subsequently amended on or about September 15, 1976 to add MICRO-PRODUCTS ENGINEERING CO. (MICRO-PRODUCTS) as a defendant. Stipulated.

1.03 Defendants, and each of them, answered the Amended Complaint, denying infringement of the '090 patent and challenging the validity of the patent on a number of grounds. Counterclaims were filed by defendants which were based on several Counts, viz: (1) Declaratory Judgment, asking to have the '090 patent declared non-infringed, invalid and unenforceable; and (2) Unfair Competition, charging GRAYHILL with harassing AMF's customers and potential customers; and (3) Violation of the Anti-Trust Laws. All Counts of defendants' Counterclaims were denied by GRAYHILL. Stipulated.

1.04 Jurisdiction of this action is founded upon 28 U.S.C. §§ 1337 and 1338. Venue is properly established within this jurisdiction. Jurisdiction and venue of this court are not disputed. Stipulated.

II. THE PARTIES AND THEIR RESPECTIVE TRIAL WITNESSES.

2.01 Plaintiff GRAYHILL, an Illinois corporation, is an electrical switch specialist that manufactures and sells miniature electrical switches including rotary, push-button and DIP* switches and relays for industrial, commercial, and military applications. It has its own research and development, and engineering facilities. Its products are marketed through a nationwide complement of independent distributors and independent manufacturer's representatives. Stipulated.

2.02 Defendant AMF, a New Jersey corporation, is a multi-divisional "Fortune 500" corporation which through subsidiaries manufactures leisure time, industrial and government products. The sale of a certain type of miniature electrical switch known as a DIP switch, by RCL, which is part of the industrial products line, is the basis

* DIP, an acronym for "dual in-line package", is a term applied to a line of standardized electrical components used in electronic circuitry assembled on printed circuit boards.

for GRAYHILL's charge of infringement. RCL manufactures and sells precision and power wire-wound resistors, miniature rotary switches, electromagnetic delay lines and resistor networks. RCL does not manufacture DIP switches but contracts with an outside source, MICRO-PRODUCTS, for its supply. Stipulated.

2.03 MICRO-PRODUCTS, a New Jersey corporation, is a specialty fabricator that manufactures RCL's DIP switches on contract according to detailed specifications and drawings owned and provided by RCL. All molds, dies, manufacturing tools and assembly fixtures, except for standard commercial items, used in the manufacture of defendant RCL's DIP switches by MICRO-PRODUCTS are the property of RCL. MICRO-PRODUCTS manufactures the DIP switches only for RCL, with the manufacturing being done solely on an order-by-order basis. Upon completion of manufacture for each order, the switches are shipped to RCL. MICRO-PRODUCTS does not maintain any inventory of manufactured switches. Stipulated.

2.04 In the course of the trial of this matter, John M. Kikta, Vice-President of Engineering for plaintiff GRAYHILL, testified on behalf of plaintiff in establishing its prima facie case. Stipulated.

For its defense testimony defendants called Robert H. Twyford, President of Mechanical Enter-

prises, and Ira R. Ehrlich, a college professor and Dean for Research at Stevens Institute, whose research activities mostly related to automotive-related vehicles for off-road and on-road use. Defendants also called Harold Krieg of SAE and rely upon designated portions of depositions of Joseph R. Altieri, James C. Cummings, Ricardo Garcia, Gene R. Hill, Herman J. Hohausser, John Kikta, John A. Udisches, Bruce E. Vinkemulder, Jack Volz and Joseph N. Ianuzzi; and upon stipulated facts.

In rebuttal plaintiff called Pierre Schwab, Vice-President of Manufacturing of Ackerman Bodnar Corporation. Prior to becoming associated with Ackerman Bodnar, Mr. Schwab had extensive electrical switch design experience including miniature switches. Stipulated.

While working for Edison Electronics, Inc., he designed and patented the first miniature switch for DIP applications. Stipulated.

Plaintiff also called John A. Udisches, Original Equipment Manufacturer Sales Manager and former Marketing Manager for GRAYHILL, and Frank Tyliniski, President of Frank Tyliniski Company, which functions as GRAYHILL's sales representative in New York and New Jersey. Stipulated.

III. TECHNOLOGICAL BACKGROUND.

3.01 The past twenty-five years have seen a trend in the field of electronics toward marked reduction in size of electronic devices, with the advent of the transistor and miniaturization resultant from integrated circuits. It is now possible to contain within a small chip the size of a pencil eraser a device whose pre-solid state vacuum tube counterpart would occupy several cubic feet and cost many times as much.

When it is realized that several such devices (integrated circuits) can be mounted on a single printed circuit board, the extent of size reduction can be appreciated. (PX 5, PX 9A, PX 9B). Stipulated.

3.02 The aforesaid trend has not dispensed with the necessity of human control.

A single electronic device may be capable of several different functions. Stipulated.

One device for accomplishing this is, of course, the switch. Stipulated.

3.03 Electrical switches are devices for making or breaking electrical circuits. Stipulated.

There are numerous kinds of switch designs. (Tr. 632-634).

Design principles which may be applicable for one type of switch cannot always be used to design other types of switches. Stipulated.

3.04 One line of printed circuit is an electrical device in which the wiring and certain components consist of a thin coat of an electrically conductive material, such as copper, applied in a pattern on an insulating substrate by any of several graphic arts procedures. (PX 5). In one technique the conductive material is etched to provide an interconnection pattern. Use of printed circuits greatly reduces the size and weight of the equipment while improving reliability and uniformity over the hand-soldered circuits formerly used and permitting mass production of electronic circuits with little chance of wiring error. After World War II printed circuits replaced conventional wiring in much electronic equipment, such as radio and television sets, computers and control equipment, and the like. Stipulated.

3.05 The design of electronic equipment became more sophisticated with the development of small, compact, integrated circuit packages. An integrated circuit package represents a combination of interconnected circuit elements such as transistors, resistors, etc., that are inseparably associated with a continuous base material in a single small package. Integrated circuits provide significant size advantages over conventional circuitry. Stipulated.

3.06 In modern sophisticated production techniques, automatic equipment is used which

permits the electronic components to be assembled and connected on the printed circuit board. The lead wires or terminals of the components are automatically inserted into a preselected pattern of holes in connection patterns provided on the printed circuit board and soldered to the board using a wave-soldering bath in which the board is held a short distance above the solder bath. A wave-making device causes a ripple to run down the length of the molten solder so that the solder just laps against the copper side of the board. All of the protruding terminal ends pick up the solder and are secured to the copper. Excess solder falls back into the bath and leaves the insulated areas between the conductors free from metallic contaminant which could cause short circuits. Stipulated.

3.07 Volume integrated circuit users have promoted industry standards. The Joint Electron Device Engineering Council (JEDEC) functioned as the standardizing group to provide detailed dimensional (mechanical) package outlines for electronic components including integrated circuitry. This resulted in the development of a line of dual-in-line package (DIP) components employing many pairs of terminals in a single package, which were particularly useful in assembly equipment which would automatically insert the DIP components in printed circuit boards. For

example, DIP integrated circuits are available having twenty or more pairs of terminals. Not only were dimensional package outlines established, but also a standard grid system for the mounting holes in the printed circuit board using a pitch in the X & Y axes of 0.1 inch was established. (PX 5). The resulting standard package outline allows many different types of integrated circuits to be plugged into the same socket or same pattern on a printed circuit board. For example, in one set of standards, not only is the package outline standardized, but also the terminals of the components are arranged in side-by-side aligned pairs with the respective terminal pairs being spaced 0.300 inch apart and adjacently aligned 0.100 inch apart. In addition to integrated circuits, a number of other circuit elements, including electrical switches, are available as DIP components. Stipulated.

3.08 The power of the computer equipment rests not only in its speed and capacity for manipulating large masses of coded data, but also on the fact that it can perform complicated sequences of such actions under control of a stored program. This permits the same computer to work at a variety of tasks in sequence or even intermittently. Before the computer can work at all, however, a program or programs must be prepared and introduced in a programming language

into its storage. A computer program is run on a computer system, not just a computer. That is, the digital processor and memory that execute the stored program are imbedded in a complex configuration of equipment, which includes input/output devices and mass storage devices, remote transmission links, and possibly control interfaces to other machines and processes. The system itself may be internally organized to work on several jobs intermittently, thus improving its total "through-put" rate. The computer cannot exercise judgment or common sense, and it must be meticulously instructed in the program as to how to handle every contingency. Stipulated.

3.09 The mode in which such a computer system is operated varies according to a purpose which must be known to the programmer. Stipulated.

Where only a single mode is contemplated for the computer - such as a solid state, manually operated, hand-held calculator - single function integrated circuitry can be used. Stipulated.

Where a plurality of modes is contemplated using the same equipment, the relationship of the integrated circuits in the equipment can be controlled and manually programmed employing DIP switches. Stipulated.

While technically conventional electrical switches could be used for this programming, they

were not compatible for use on printed circuit boards designed for DIP components. Stipulated.

DIP switches have thus become popular in the field of electrical switches.

3.10 DIP switches have applications as circuit panel switches or logic card selector switches. In addition to their use in manually programming a multi-function to perform one specific function, they can be used to address a specific portion of a computer memory, used as a test switch to check the circuit operations in various modes, etc. Whenever system manufacturers require a change in the operation of their equipment, this can be readily accomplished by a back panel adjustment of a DIP switch. (PX 4). Therefore, manufacturers of computer peripherals, input terminals, test equipment, telephone equipment and process control equipment are potential prospects for this type of switch. A very simple application is the use of one of these switches to program the change device in a vending machine. The proper combinations of the switches that are in the closed position and the switches that are in the open position provide the proper coin return for one unit price. Changing the combination will provide the change for a new unit price. (PX 9a). Garage door openers are also programmed using DIP switches. (PX 9B). Stipulated.

3.11 In 1974 GRAYHILL became interested in the addition of DIP switches to its established electrical switch line, none of which was adaptable to being converted to a DIP switch, but some of which were being sold for incorporation as components in printed circuit board panels. GRAYHILL conducted a market survey (PX 10) and ascertained that as of September 1972 DIP switches were being marketed by the Daven Division of McGraw-Edison Co., AMP Incorporated, Siemens Corporation, and the Digitran Co. Stipulated.

3.12 The Daven and Digitran switches were rotary actuator* switches in which a plurality of cams mounted on the rotatable shaft were programmed to open or close the conductor terminals of the switching mechanism. The Daven Mechanism is illustrated in PX 6J. The AMP switch was a rocker actuator type DIP switch in which the conductor terminals were moved from the open-closed positions by the rocker actuator. The AMP switch is shown in PX 6E-1 and PX 6E-2. The Siemens switch was a slide-type DIP switch in which the conductor terminals of the switching mechanism were urged into the open or closed position by the sliding action of the switch actuator. The Siemens switch is illustrated in PX 7B. Stipulated.

* The actuator is an integral part of a basic switch to which an external force can be applied to operate the switch.

3.13 Each of these prior art DIP switches listed in 3.12, supra, used a switching mechanism which employed cantilevered, leaf spring electrically conducting elements made of copper or a copper alloy which were bent or flexed by the movement of the actuator when operating the switch between the "off" and "on" positions. Stipulated.

As pointed out in the September 1972 market survey (PX 10), the reliability of the switches examined showed that at least some were deleteriously affected by the flimsiness of terminals and by other design characteristics, such as poor detent action (i.e., the detent action of the rocker is "extremely light") and by poor contact pressure. (Tr. 48).

IV. GRAYHILL'S ACTIVITIES IN DEVELOPING ITS DIP SWITCH.

4.01 In November 1972, as a result of the September 1972 market survey (PX 10), GRAYHILL's Product Planning Committee authorized and initiated a DIP switch design program. Stipulated.

The only design parameters designated by the Product Planning Committee were to provide a basic design concept involving seven rocker type switches in a fourteen pin DIP package, which would overcome the deficiencies in the switch designs mentioned in PX 10 (see 3.13 supra). (Tr. 47, 53).

4.02 In early November 1972, a design engineer employed by GRAYHILL, Ricardo Garcia, was assigned to work on the design of a DIP switch. (Tr. 58-60). He was at the time unaware of any other ball contact system; he was aware of spring-loaded ball detents in switches. In the period that followed through April 1973, Garcia attempted several design concepts which embodied different switching mechanisms, including the use of a ball contactor cooperating with fixedly mounted or rigid conductor terminals.* (PX 12-2 through PX 12-6). These design concepts (which never got beyond the drawing stage) were not approved. Stipulated.

4.03 Although GRAYHILL had manufactured miniature type switches prior to this time, none of its switch designs embodied the use of a ball contactor system for use as a shorting element although detent assemblies used in several of the switches to provide positive retention in the off or on position did use a spring-biased ball arrangement. No electrical contact was made through the detents. In discussing those design

* Prior to the Product Planning Committee meeting in November 1972, Garcia had prepared an initial design which was not rocker actuated. (PX 12-1). This design was rejected at the meeting. (Tr. 54-57).

concepts which used ball contactors as part of the switching mechanism, Mr. Kikta, based on previous experience with ball contactors, had expressed his concern over their reliability. (Tr. 89). Stipulated.

4.04 Garcia's design efforts continued into May 1973, as he worked on the designing of a rocker actuated DIP switch utilizing the ball contactor-rigid conductor terminal switching mechanism embodied in the '090 patent. His final embodiment of this concept is shown in PX 13. (Tr. 92). No prototype models of the switch were made at that time. (Tr. 90-95).

4.05 The design concept was presented to the GRAYHILL Product Planning Committee in May 1973. Kikta's skepticism was again expressed but the Committee saw some promise in the design and authorized "soft" tooling* for the production of the prototype models which could be extensively tested. (Tr. 96).

* "Soft" tooling, as it relates to GRAYHILL's practices, involves the preparation of dies, molds and other equipment necessary to make the various piece parts which can be assembled to provide working prototype models. Such models are used for extensive testing to obtain performance data for use in product presentation to prospective customers. "Soft" tooling is distinguished from production tooling, that is, "it's not made for full production. It's terminology that's used for short run production quantities." (Tr. 98).

4.06 Tooling for the production of prototype models was ordered in July 1973 for design evaluation and extensive testing. By October 1973 prototype samples were made and employed in an extensive test program. The model which was being tested was a seven rocker DIP switch. The testing was carried out to determine whether or not the design concept met the design objectives and solved the problems in DIP switch design set forth in the September 1972 market survey (PX 10) and to test the performance and efficacy of the ball contactor switching mechanism about which Kikta was primarily concerned. (Tr. 99).

4.07 Testing was conducted in-house at GRAYHILL and involved life testing and environmental testing to determine the effect of humidity, salt spray, shock, vibration, atmospheric contamination* and the effect of the wiping action of the switching mechanism in cleansing the contaminant films from the contact surfaces. Testing of the prototype models within the GRAYHILL laboratories continued into March 1974. (PX 15-1 to PX 15-9). Testing of the prototype switch was also carried out by Wescom, Inc., an outside facility which had additional testing capabilities for evaluating

* The effect of contaminant films on the contact surfaces is to increase the contact resistance of the switch as well as create open circuits. (Tr. 101-102).

the production solderability of the prototype switch. This test work was carried out in December 1973. (Tr. 99 - 103). Testing input was also obtained from Western Electric engineers who were shown a single prototype switch model and their comments solicited regarding "feel" of the switch, the external dimensional design of the switch, and other superficial non-mechanical design features in which customers might be interested from an application standpoint.*

4.08 By February 1974 sufficient test information had been obtained and evaluated by Kikta to overcome his skepticism. (Tr. 104). Accordingly, at the February 1974 Product Planning Committee meeting the Garcia DIP switch design was recommended, and it was agreed by the Committee that a seven rocker version (i.e., seven actuators in sequence) of the design be put into production. (Tr. 104).

4.09 The switch design embodied in PX-13 employing fixedly mounted or rigid conductor terminals in the switching mechanism was first shown to the public at an IEEE show in March 1974.

Thereafter, the design concept was finalized and the first production tooling for the switch was ordered in April 1974. Stipulated.

* See also Section VIII, infra.

The first actual sale of the GRAYHILL DIP switch was in September 1974. Stipulated.

First shipments of GRAYHILL DIP switches sold by GRAYHILL were in November 1974. Stipulated.

V. RCL DIP SWITCH ACTIVITIES*

5.01 In April 1974 RCL Electronics, Inc. had not yet been acquired by AMF. RCL Electronics' product line at that time included precision and power wire-wound resistors, miniature rotary switches, electro-magnetic delay lines and resistor networks, but did not include a DIP switch product. Stipulated.

5.02 In an effort to add DIP switches to its product line, in April 1974 RCL employed Joseph R. Altieri, a consulting engineer in the field of electro-mechanical, electrical, and electronic design. (PX 30-4). Mr. Altieri was, by education and experience, a highly qualified electrical engineer who had considerable experience in the design of electrical products including electrical switches. (PX 30-1). Mr. Altieri can be aptly described as one skilled in the art of electrical switch design including DIP switches.

* These findings of fact are based upon the Altieri deposition and exhibits (PX 30, PX 30-1 to PX 30-63E), and deposition testimony of Jack Volz, RCL Vice President (PX 56).

His capabilities included carrying a new product from the definition phase to completion of a full set of manufacturing part and assembly drawings for use in the commercial production of the electrical product. A number of patents in the electrical field have issued to Mr. Altieri. (PX 30-1). Mr. Altieri had also been employed as an expert witness in patent litigation involving RCL Electronics, Inc. as a defendant. See Dale Electronics, Inc. v. RCL Electronics, Inc., 356 F. Supp. 1117 (D.N.H. 1973). Mr. Altieri was not called as an expert witness by defendants in the case at bar. Stipulated.

5.03 Mr. Altieri's first assignment was to generally survey what DIP switches were available and to make recommendations as to how a DIP switch might be made. Stipulated.

His initial efforts which employed the same investigatory technique used by GRAYHILL involved a market study of a number of commercially available DIP switches and an analysis of the competitive features of DIP switches made by CTS-Keene, American Pamcor, Inc., Stanford Applied Engineering (SAE), Duncan, and American Components, Inc. (PX 30-10). Stipulated.

The switch action of these switches is shown in PX 8. Stipulated.

His analysis of the competitive features of these switches included 55 different parameters

of the mechanical and electrical characteristics of the switches as set forth in PX 30-10. Stipulated.

During this period, although not reported in the comparative study, Mr. Altieri also examined what he characterized as "el-cheap-Jap slide switch." Stipulated.

He refers to five alternate proposals in PX 30-19. Stipulated.

5.04 Following the completion of his market survey, Mr. Altieri prepared a report (PX 30-9) which was submitted on or about May 15, 1974 to RCL, in which he rated the switches in his personal order of preference as follows:

- 1 - CTS
- 2 - AMP
- 3 - SAE
- 4 - ACI
- 5 - Duncan

With respect to the SAE switch, he stated, "I don't like the S.A.E. contact action as well as the others. . . ." While conceding that the CTS and AMP switches "both seemed to be very clever," he thought that "the contact spring material (in the AMP switch) is very badly overstressed" and did not understand "why they don't break off." He also expressed his personal dislike of "rocker type actuation" in switches of the AMP size,

preferring the slide actuator of the CTS switch. Even in the proposed DIP switch designs he submitted with his report, he recognized that he had problems in using cantilevered flexing or bending elements in the switching mechanism, stating that:

I have some tentative ideas for entirely separating the three functions of (1) contact, (2) spring, (3) detent. [Because he associated difficulties with the combination of contact and detenting functions] I can't tell how good they are until I scale them. I think it will require some additional height but perhaps not over C.T.S.'s 0.32 in. I'll scale that up next, and if I like what I get, I'll send it along as Pro - II. Then I think I'll go back and take another look at the ideas I had as a variation on C.T.S.'s design. In the final analysis, if I can work out the spring stress problem, we might like that one best even though we might look like copycats, because it will result in the least number of parts.

Stipulated.

5.05 Mr. Altieri's initial efforts to solve the problems that the prior art DIP switch provided resulted in his first proposed design which was submitted to RCL Electronics, Inc. in May 1974. This design, which employed a slide-type actuator, is diagrammatically shown, respectively, in the off and on positions in PX 30-20C. This design, however, was never reduced to a working prototype and was rejected by RCL Electronics, Inc. RCL was characterized by Mr. Altieri as being "not

happy" with the switch design. (PX 30-24). Thereafter, Mr. Altieri made several other designs for multiple-section slide-type DIP switches, which are shown diagrammatically respectively in PX 30-20A and 30-20B. Stipulated.

5.06 After consulting with RCL Electronics, Inc. in June 1974, it was decided that proposal of PX 30-20A would be finalized, whereupon Mr. Altieri proceeded with the preparation of production drawings. By August 1974 he had finalized two complete sets of detail part drawings in suitable condition for a production release. No prototypes were made of this design. Stipulated.

5.07 It does not appear that Altieri did further work on this design once RCL obtained a sample of the GRAYHILL DIP switch and Mr. Altieri was assigned by RCL to copy the GRAYHILL DIP switch.

RCL had previously learned of the GRAYHILL DIP switch in June 1974, at which time RCL's President, E. L. Grayson, instructed his engineering personnel to continue working on the Altieri slide-DIP switch design, stating that, "Simply because one engineer at Western Electric prefers a rocker action is no reason for us to shift design plans at this stage." (PX 30-30, PX 30-31). Stipulated.

5.08 In September 1974 samples of a GRAYHILL DIP switch were obtained by RCL and a meeting

with Altieri was held. Stipulated.

After this meeting the earlier DIP switch design proposals made by Altieri were abandoned as far as he was concerned, and he was given the assignment of generating "a set of drawings exactly like" the GRAYHILL rocker-type DIP switch, which was "forcefully brought" to his attention. (PX 30, pp. 56, 76).

On September 11, 1974 he started Phase one of the project, which he entitled "CHINEZE COPY-NO STUDY," to duplicate exactly the GRAYHILL rocker type DIP switch, and to do it in "zero time." Stipulated.

This Phase consisted of making photographs to scale of all parts, scaling accurately the parts for all dimensions and preparation of production drawings. (PX 30, pp. 76, et seq.). Stipulated.

He conducted his copying work throughout the remainder of September and October 1974. Stipulated.

Less than two months after beginning work on the project, by November 4, 1974, he completed a finalized set of prints to be used in the commercial production of the rocker-type DIP switch which was to be sold by RCL. (PX 30-32, PX 30-32A, PX 30-33, PX 30-34, PX 30-36, PX 30-37, PX 30-38, PX 30-39, PX 30-40, PX 30-41, PX 30-42, PX 30-43, PX 30-44, PX 30-46, PX 30-47, PX 30-48,

PX 30-62). Stipulated.

5.09 The resulting switch which was offered commercially for sale by mid-1975 was an exact duplicate down to the last mechanical and electrical detail of the commercial GRAYHILL DIP switch model which was given to Mr. Altieri by RCL to be copied. The RCL rocker-type DIP switch was manufactured for RCL by MICRO-PRODUCTS. The current production of RCL DIP switches still employs the GRAYHILL design which was copied by Mr. Altieri in his "CHINEZE COPY" project. (PX 30-38B). Stipulated.*

VI. THE '090 PATENT

6.01 The Garcia '090 patent, issued May 18, 1976, relates to a miniature switch assembly having a number of switches packaged within one case. Stipulated.

Claim 1 is representative. Rearranged from the form in the issued '090 patent (without affecting the substance), it reads as follows:

A miniature electrical switch comprising

A housing including:

A cover portion:

* As a result of this copying, defendants agree that if the GRAYHILL switch is a true embodiment of the Garcia patent (which defendants deny), defendants' switch infringes the Garcia patent. The subject of infringement will be covered subsequently.

being generally rectangular in shape and having a top wall, opposed side and end walls;

being open opposite the top wall; and

having openings for a portion of the (switch) actuators to extend therethrough to be engaged during the operation of the switch, and

bearing means integrally formed in the cover portion for coaxing with shoulder means of each actuator;

A base portion:

being rectangular in form and of substantially the same rectangular form as the cover portion

Switching and terminal means mountable within the housing and including:*

A frame member supporting

a plurality of juxtaposed sets of conductor terminals, each set of conductor terminals including

a pair of axially aligned terminal arms having spaced apart contact portions

defining an open area therebetween and

* What follows is stated by the plaintiff to be the essence of the alleged invention of the Garcia patent.

terminal legs integral with said arms and extending at right angles to said arms;

a plurality of ball contactors of electrical conducting material;

a plurality of actuators of electrical insulating material:

each actuator having shoulder means for permitting pivotal mounting thereof within the housing

a blind hole in each actuator facing the contact portion of the terminals and freely receiving a ball contactor

resilient means in the blind hole for resiliently urging each ball contactor outwardly of the blind hole and into engagement with one or both of the contact portions of the terminal arms.

Stipulated.

While the Garcia patent does not make any reference to DIP switches, the invention has particular application in the manufacture of DIP switches which are principally used with printed circuit boards.

The specification states that an object of the invention is to provide "positive contact and tease proof reliability" (col. 1, l. 36-38); it explains that the rocker moves the ball to over-

come "the detent shoulder" on the terminal (col. 1, l. 61-62); and the sliding ball contact provides a positive wiping action and tease proof reliability (col. 1, l. 65-68).

In addition, it is stated that the miniature switch disclosed and claimed incorporates "a switching mechanism which is capable of in excess of 50,000 mechanical operations . . ." (col. 4, l. 17-19).

6.02 Characteristics of the GRAYHILL DIP switch include a favorable life expectancy, wiping action and tease proof reliability afforded by a positive detenting action.*

6.03 The improved life expectancy sought by the GRAYHILL Product Planning Committee is achieved in the GRAYHILL switch by the life expectancy in excess of 25,000 cycles. (Tr. 100, 113). This life expectancy which is determined by accelerated life testing is greatly in excess of normal manual operation and constitutes a severe test of the switch. While not all miniature switch applications require such a life

* Defendants, as I have already noted, contend that the GRAYHILL DIP switch does not embody the design of the Garcia patent. More about this will be said later. At this juncture, however, it should be noted that this finding, as well as 6.03, 6.04, 6.06 and 6.07, apply to the GRAYHILL switch, as distinguished from the design of the Garcia patent. See also the footnote following VII, infra.

expectancy, the extended life expectancy of the switch provides a built-in factor of reliability. (Tr. 49, 50). Stipulated (as applied to the GRAYHILL switch).

6.04 Contributing to the exceptional life expectancy is the unexpected wiping action achieved in the GRAYHILL switch. (Tr. 682).

6.05 Wiping action is necessary in order to remove build-ups of films of contaminating materials on the elements of the switching mechanism. Such films derive from exposure of the switch to the atmosphere which produces films of metal oxides, sulfides, etc. These films are less or non-conductive with respect to the normal conductivity of the components of the switching mechanism. Accordingly, such films can affect the contact resistance of the switch and seriously impair the operation of the circuit in which the switch is installed where such circuits are used in low current ("dry" circuitry) applications. (Tr. 101, 102, 676).

6.06 The spring-loaded ball contactor further enhances the reliability of the switch by providing a greater latitude in selecting rugged materials of construction for the components of the switch action. Stipulated.

6.07 Improved life expectancy and reliability is also achieved by the specific structure of the fixedly mounted or rigid conductor terminal

elements of the switching mechanism of the GRAYHILL switch. (Tr. 306).

6.08 The undesirable flimsiness of the conductor terminals employed in miniature switches of the DIP type was recognized as a deficiency to be overcome by GRAYHILL's Product Planning Committee as a result of the September 1972 GRAYHILL market survey. (PX 10).

6.09 RCL's consulting engineer, Mr. Altieri, also recognized the problem and reported to RCL in his May 1974 report (PX 30-9) of his product survey:

"I really like the rotary toggling and locking contact action of the AMP design, but I think the contact spring material is very badly over stressed! (750,000 psi in phosphor bronze??) I can't understand why they don't break off. Also I think the terminals are much too flimsy, I don't like the glued on terminal assembly construction, and I personally do not like a rocker type actuation in that size."

Stipulated.

6.10 The '090 patent discusses this specific problem relative to miniature switch arrangements, pointing out that:

"Many of these arrangements include a switch assembly wherein the switch operating member functions to bend one terminal of the switch assembly onto the other terminal of the switch assembly to complete the switch action. Of necessity, the conductor terminals

must be very fragile to withstand such a deformation to provide the switch action. Understandably, such switch assemblies have a lifespan of only about 5000 mechanical operations, a performance standard which is unacceptable in many printed circuit board applications."

Stipulated.

VII. VALIDITY OF THE PATENT.

A. NOVELTY AND ANTICIPATION

7.01 None of the prior art references relied upon by defendants disclose within their respective four corners the miniature switch invention of the patent in suit. Accordingly, the same invention is not anticipated under 35 U.S.C. § 102. Stipulated.

B. OBVIOUSNESS

The Law

The unobviousness test is embodied in 35 U.S.C. § 103: "A patent may not be obtained though the invention is not identically disclosed or described as set forth in § 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. . . ." Stipulated.

It is well settled that in resolving the obviousness issue a court must make ". . . several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved." Graham v. John Deere Co., 383 U.S. 1, 17, 86 S.Ct. 684, 694 (1966).

i. The Relevant Art:

7.02 The relevant art is that of designing and manufacturing miniature switches, including but not limited to the DIP switch, using low voltage and current. (Tr. 633-634).

ii. Level of Skill in the Relevant Art:

7.03 Those who are skilled in the art in the field are usually mechanical engineers with a background in electromechanical engineering and design. The design of an electronic switch is the design of a component rather than an electronic system. Manufacturers of switches are concerned not only with the electrical and mechanical properties but also with compatibility with existing components, and with the needs of customers. Designers must be aware of the capabilities and limitations of their own manufacturing facilities and business factors such as raw material and labor costs, product liability, marketing and distribution channels, etc. Stipulated.

The approach that a worker of ordinary skill would use when given a particular design problem would be fairly standard. He first would establish a set of specifications and goals for the switch he wants to design. He would then look at the prior art in this field and review his competitors' activities, extending his consideration of the prior art to reviewing the patented prior art. He would use portions of the prior art in combinations with his own ideas, possibly using a combination of principles of design joined together with his own line [to achieve his concept]. Note: All except the bracketed portion of this paragraph has been stipulated.

In determining the level of skill in the pertinent art, one may consider the qualifications of the worker of ordinary skill in the art, the approach that such a worker would use when given a design problem, and the state of the art reflecting what others have done in the pertinent art not only before, but within a reasonable time after, the invention under consideration.

(Tr. 640, et seq.)

iii. Scope and Content of the Prior Art:

7.04 In this case the printed publications of interest fall into three categories: those before the Patent Office, new publications relied upon by defendants, and publications introduced

by plaintiff to show the "level of skill of the art" in the 1970-1975 time frame.

(a) The publications which were before the Patent Office during the prosecution of the '090 patent. These consisted of:

AMP Publication (DX 31)*
Cooper 3,750,085 (DX 30)
Gordon 1,131,129 (DX 26)
Hendricks 1,412,002 (DX 27)
Lodge 2,246,373 (DX 28)
Bonnaire 2,927,185 (DX 22)
Meuer 1,882,857 (DX 21)
French Patent 1,150,430 (DX 25)
Sorenson 3,227,820 (DX 23)
Shifley 3,618,409 (DX 29)
Hoehn et al. 3,684,847 (DX 24)

(b) The publications relied upon by defendants. This group of publications originally constituted the publications cited by defendants in their 35 U.S.C. § 282 notice. During the trial defendants did not offer as exhibits certain of these publications. As to those publications offered, there was testimony directed to them. The following tabulation shows the result:

* Figures 1-5 of the Lockard patent 3,878,344 (DX 63) are stipulated to be substantially the same as the AMP publication (DX 31). (Tr. 375).

PUBLICATIONS RELIED UPON BY DEFENDANTS*

35 U.S.C. § 282 Notice	Introduced as Exhibits	Specifically Referred to in Testimony
AMP Publication (DX 31)	AMP Publication (DX 31)	AMP Publication (DX 31)
SAE Publication** (DX 33, 34)	Lockard 3,878,344 (DX 63)	Lockard 3,878,344 (DX 63)
Lockard 3,878,344 (DX 63)	SAE Publication** (DX 33, 34)	SAE Publication** (DX 33, 34)
O'Dea 3,792,210 (DX 32)	O'Dea 3,792,210 (DX 32)	O'Dea 3,792,210 (DX 32)
Cooper 3,750,085 (DX 30)	Cooper 3,750,085 (DX 30)	Hendricks 1,412,002 (DX 27)
Gordon 1,131,129 (DX 26)	Gordon 1,131,129 (DX 26)	Lodge 2,246,373 (DX 28)
Hendricks 1,412,002 (DX 27)	Hendricks 1,412,002 (DX 27)	Bonnaire 2,927,185 (DX 22)

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* Defendants now rely only upon those items introduced as exhibits.

** This publication, plaintiff contends, should not be considered to be an effective publication. See 28, infra.

Lodge 2,246,373 (DX 28)	Lodge 2,246,373 (DX 28)	Pearce 2,464,184 (DX 35)
Bonnaire 2,927,185 (DX 22)	Bonnaire 2,927,185 (DX 22)	Carbonara 3,710,057 (DX 37)
Pearce 2,464,184 (DX 35)	Pearce 2,464,184 (DX 35)	Ianuzzi 3,757,060 (DX 69)
Carbonara 3,710,057 (DX 37)	Carbonara 3,710,057 (DX 37)	Gordon 1,131,129 (DX 26)
Ianuzzi 3,757,060 (DX 69)	Ianuzzi 3,757,060 (DX 69)	Cooper 3,750,085 (DX 30)
Meuer 1,882,857 (DX 21)	Meuer 1,882,857 (DX 21)	Meuer 1,882,857 (DX 21)
French Patent 1,150,430 (DX 25)	French Patent 1,150,430 (DX 25)	French Patent 1,150,430 (DX 25)
Sorenson 3,227,820 (DX 23)	Sorenson 3,227,820 (DX 23)	Sorenson 3,227,820 (DX 23)
Shifley 3,618,409 (DX 29)	Shifley 3,618,409 (DX 29)	Shifley 3,618,409 (DX 29)
Hoehn et al. 3,684,847 (DX 24)	Hoehn et al. 3,684,847 (DX 24)	Hoehn et al. 3,684,847 (DX 24)

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35 U.S.C. § 282 Notice

Spiegler 3,340,347
 Clark 3,340,348
 Doelp 3,374,537
 Tsuji 3,404,319
 Hingorany 3,629,668
 Chow 3,747,209
 Johnson 2,817,722
 Happe et al. 3,072,768
 Johnson 3,294,929

(c) Those publications introduced by the plaintiff as reflecting the activity of the workers in the art of miniature switches in the period 1970-1975, which bracketed the time frame in which Garcia was working to conceive and reduce to practice the miniature switch assembly embodied in the '090 patent. (PX 7A-7Y).*

7.05 A description of those publications introduced by defendants follows:

A. Lockard Patent No. 3,878,344 (DX 63)
and AMP DIP Switch Brochure (DX 31)

The Lockard patent, issued April 15, 1975 but entitled to an effective filing date of April 13, 1972 with respect to the embodiment of

* Schwab, plaintiff's expert, testified, and I so find, that the Ianuzzi patent (DX 69) and the SAE brochure (DX 33) should be included among the publications in plaintiff's Exhibit 7, reflecting as they do the level of skill in the art during 1970-1975. (Tr. 754, 758).

Figures 1 through 5, can be considered together with the AMP brochure (DX 31) that was before the Patent Office during the prosecution of the Garcia application inasmuch as they essentially show the same DIP switch structure. The AMP brochure was called to the attention of the Patent Office by plaintiff. Stipulated.

Both references show a DIP switch having a plurality of rocker-actuators pivotally mounted in a housing and having means for camming a plurality of sets of resilient spring contacts comprising pairs of overlapping bendable, flat springs, into and out of engagement with each other to cause opening and closing of circuits. In the embodiment of Figs. 1 to 5 of Lockard the rocker actuator differs slightly from the configuration of the rocker actuator shown in the AMP brochure. Stipulated.

B. Stanford Applied Engineering Switch (DX 33, 34)

The SAE switch, not of record in the Patent Office, disclosed in the SAE brochure (DX 33) and SAE drawing No. 931000 (DX 34), is a miniature electrical DIP switch having a plurality of pairs of conductor terminals mounted within a housing. A rocker actuator (lever wheel) having a contactor of electrical conducting material on the bottom thereof is provided for each pair of conductor terminals. In one position of the

actuator the contactor is disposed in engagement with the contact portions of both conductor terminals to close the switch and movement into a second position moves the contactor into engagement with the contact portion of only one conductor terminal to open the switch. The contact portions of the conductor terminals flex in moving the actuator either into the open position or the closed position. Stipulated.

C. O'Dea U.S. Patent No. 3,792,210
(DX 32) issued February 12, 1974

The O'Dea patent, not of record in the Patent Office file of the Garcia patent, is a microminiature switch having a housing base and a housing cover, a pair of contacts in the base with a ball member held in place by the cover for closing the circuit.

As illustrated in Figs. 5-7, a housing base 101 having a peripheral ledge 103 has a pair of contacts 105 and 107 embedded therein. Contacts 105 and 107 have terminal portions 109 and 111 extending exterior to the housing. Contact 107 has a short, inclined portion 113 and a vertically depending portion 115 positioned in a recess 117 in housing base 101. The angle of portion 113 is about fifteen degrees below the horizontal.

Contact 105 is somewhat more resilient than contact 107 and has a depending portion 119 posi-

tioned in a recess 121. A fifteen-degree angled portion 123 having an apex 125 connects portions 119 and 123 with a concave detent portion 127 of about 150 degrees.

A housing cover 129 has four side walls 131 with a peripheral recess 133 conforming with ledge 103. The housing cover has a plurality of openings 135 having substantially vertical portions 137. Inclined surfaces 139 connect portions 137 to a plurality of partitions 141. A ball contact 143 is positioned between a point 144 where inclined surfaces 139 join vertical portions 137 and the contacts 105 and 107. In the "open" position, the ball 143 rests in the concave portion 127. As the ball is forced to the right by actuator 40, it rests on portions 113 and 123 bridging the contacts. Since contact 105 is resilient, there will be flexure at apex 125 as the ball exerts a downward force thereon. Stipulated.

D. Cooper Patent No. 3,750,085
(DX 30) Issued July 31, 1973

The Cooper patent was called to the attention of the Patent Office by plaintiff during the prosecution of the Garcia application.

Cooper teaches a component for use on printed circuit boards which defines a socket for removably receiving a DIP component such as an integrated circuit package having a plurality

of sets of terminals or contacts in a DIP configuration. The Cooper device includes a base portion of electrical insulating material mounting a plurality of terminals or contacts in a DIP configuration which would be suitably secured to a printed circuit board. Apertures formed in a lid or top portion align with apertures formed in the base portion within which the contacts are arranged and serve as sockets for receiving terminals or contacts of an integrated circuit package having contacts as seen in Fig. 1. The lid portion is movable relative to the base portion and once the terminals of the integrated circuit component are inserted into the apertures of the lid portion as shown in Fig. 4, the lid portion with the integrated circuit component is depressed to then cause the terminals in the base portion to flex and engage the terminals of the integrated circuit component as shown in Figs. 5 and 6. Stipulated.

E. Gordon Patent No. 1,131,129
(DX 26) Issued March 9, 1915

This reference was called to the attention of the Patent Office by plaintiff during the prosecution of the Garcia patent.

The Gordon switch is a pendant or hanging type, simple "off-on" switch. It employs a specific type quick-break switching mechanism. A ball, shown as the contactor, sits in the last convolution of one end of an upstanding spring, the other

end of which is secured to a plunger or the like which moves horizontally in the switch body. The switching action is effected by moving the plunger, or the like for controlling the free end of said spring so that a movement of the free end in one direction moves the ball by snap action into engagement with fixed conductor terminals and a movement in the opposite direction moves the element away from the terminals. Stipulated.

F. Hendricks, Jr. Patent No. 1,412,002
(DX 27) Issued April 4, 1922

This reference was called to the attention of the Patent Office by plaintiff during the prosecution of the Garcia patent.

The Hendricks switch mechanism is adapted for tap changing. It consists of a plurality of fixed contact posts evenly spaced about the circumference of a pair of spaced insulating discs. Each contact post has a circumferential groove. A spring-loaded ball is mounted in a recess in a rotatable member. The ball is forced into engagement with the circumferential grooves on the contact posts in its function as a bridging component in the device.

The mechanism is used to adjust voltage ratios in electrical apparatus such as transformers by rotating the ball-bridging component into engagement with a pair of contact posts. The bridging components roll into frictional

engagement with the grooves, resulting in a preferred line contact avoiding what is referred to as undesired point contact (page 2, line 35, et seq.). Stipulated.

G. Lodge Patent No. 2,246,373
(DX 28) Issued June 17, 1941

This reference was called to the attention of the Patent Office by plaintiff during the prosecution of the Garcia application.

The Lodge switch is a slide-actuated, single pole, double throw switch having a plurality of spaced, fixed conductor terminals, each of which has a "partially spherical contact portion or detent." A spring-loaded ball contactor employed in the actuator is biased into contact with two adjacent terminals to close an electrical circuit. No application for the switch is set forth.

The Lodge switch has an actuator assembly which compensates for inaccuracies and irregularities in switch manufacture. The recess in the actuator holding the ball is enlarged longitudinally of the actuator to permit back and forth movement of the ball to properly engage the terminals. Stipulated.

H. Bonnaire U.S. Patent No. 2,927,185
(DX 22) Issued March 1, 1960

The Bonnaire patent was cited by the Patent Examiner during prosecution of the Garcia patent for its teaching of a ball contactor.

Bonnaire discloses in Figure 5 an electrical switching mechanism having a rocker actuator 31 pivotally mounted on a pin 30 and carrying a ball contactor 32 in a socket in one end of the rocker actuator 31 biased by a spring 33 to engage contact pins 34, 35 and 36 resiliently held in apertures in wall 37. Stipulated.

I. Pearce Patent No. 2,464,184
(DX 35) Issued March 8, 1949

This reference, cited by defendants in their '282 notice, was not before the Patent Office during prosecution of the Garcia application.

The Pearce switch is slide-actuated and utilizes an "electrically conducting" contactor such as a spring-loaded ball contactor, in an actuator of specific design, i.e., a tapered body. A specific fixed conductor terminal arrangement is employed consisting of two pairs of conductors. The first pair of contactors is bridged by the ball contactor, the second pair is bridged by a bendable, flat spring which is sequentially urged into closed position by the tapered shape of the actuator.

The Pearce switch has specific application for use in fluorescent lamp circuits where it is necessary to utilize a switching mechanism which not only connects the lamp in the electrical circuit but also provides a means for preheating the electrodes of the fluorescent lamp which is

necessary before the lamp will start. When the operator removes his hand from the actuator which has been tilted downwardly to cause the resilient arcuate metal strip to bridge the second pair of contactors, it will revert back to its normal position thus opening the circuit through the contactors. Stipulated.

J. Meuer Patent No. 1,882,857 (DX 21)
Issued October 18, 1932

This reference was specifically considered and applied by the Examiner during the prosecution of the Garcia patent. The patent was cited by the Examiner for teaching of an actuator/contact structure.

The Meuer switch is toggle-actuated and has a "snap-action." The switching mechanism consists of a cylindrical roller contactor which is moved into contact with fixed conductor terminals by means of an actuator comprised of an upper lever portion carrying the cylindrical roller contactor. The actuator effects a camming action upon the roller contactor to accelerate its movement and provide the "snap action."

No specific applications are described for the switch. Switch applications are characterized by the expression that the specific "snap-action" switching mechanism is used in switches of "relatively low current carrying capacity." Stipulated.

K. Monteux & Cie French Patent No. 1,150,430
(DX 25) Published January 13, 1958

This reference was before the Patent Office during the prosecution of the Garcia patent. It was called to the attention of applicant by the Examiner and was generally discussed by applicant in an amendment.

The French switch is a rocker-actuated, "flip-flop" switch. The switching mechanism employs a plurality of spaced, cylindrical conductor terminals, the axes of which are parallel but arcuately disposed. The rocker actuator has a contactor comprised of two spaced rollers mounted on an axle journaled in a spring-loaded member which fits into a recess in the rocker actuator. This construction provides rolling action of the contactor. The spaced rollers function as bridging members when positioned between adjacent conductor terminals. Stipulated.

L. Sorenson Patent No. 3,227,820 (DX 23)
Issued January 4, 1966

The Sorenson patent was cited by the Examiner during prosecution of the Garcia patent for its teaching of a plurality of sets of conductor terminals. Sorenson discloses a miniature electrical switch having a plurality of rocker actuators for opening and closing a plurality of sets of conductor terminals. Each rocker actuator has a sloping convex surface to permit

ease of actuation without disturbing an adjacent actuator. Each contactor is actuated by a rocker actuator having a spring biased plunger on the bottom. Each contactor comprises a U-shaped contact lever. The switch is a single pole double throw. Stipulated.

M. Shifley Patent No. 3,618,409 (DX 29)
Issued November 9, 1971

The Shifley patent was called to the attention of the Patent Office by plaintiff during the prosecution of the Garcia application.

Shifley describes a rocker type switch which operates electrical components to define "on" and "off" conditions. The switch mechanism is only illustrative and shows a switching mechanism driven between "on" and "off" positions by a spring-loaded plunger as dictated by the positions of the lever. The invention resides in the structure of the lever and its relationship to the brackets which limit the accessibility of the lever. Stipulated.

N. Hoehn et al. Patent No. 3,684,847
(DX 24) Issued August 15, 1972

The Hoehn patent was considered by the Patent Office during the prosecution of the Garcia patent application and cited by the Examiner for its teaching of recitations of a housing.

Hoehn discloses a rocker-actuated, snap-action switch including a pivotal rocker mounted

on a shaft and connected to a movable contact arm movable between an open position as shown in Fig. 2 to a closed position wherein the contact on the movable contact arm will engage the stationary contact. Stipulated.

O. Ianuzzi Patent No. 3,757,060 (DX 69)
Issued September 4, 1973

The parties agreed upon the following description, although the defendants note that it is not complete and was supplemented by other evidence. I shall deal with this subject in additional detail hereafter.

This patent, not of record in the Patent Office, disclosed a miniaturized multi-position slide switch adapted for low voltage, low current applications, for example, so-called "shirt pocket" electronic calculators employing printed circuitry. Contact elements of uniform configuration are arranged in a row in facing pairs in an insulating base, while an insulating cover for the base carries a track for a sliding actuator having upper and lower spring-biased steel balls or a single ball. The base has a central longitudinal groove of V-shaped cross section in which the lower steel ball rides. Detenting is accomplished by a declining bevel or ramp connecting the V-groove to the V-shaped seat formed between the pairs of contact elements. One of the pairs of contact elements has either

a ball or a spring contactor biased into normally closed contact therewith. At one extremity of its travel, the sliding actuator engages the contactor and disengages it from contact with the contact elements. A dust shield in the form of an endless tape longitudinally surrounds the base and cover and has an opening through which the handle of the sliding actuator extends. The tape shield is thus shifted in an endless path by shifting of the sliding actuator.

The Ianuzzi switch is a slide switch. The Garcia switch is a rocker switch.

P. Carbonara Patent No. 3,710,057
(DX 37) Issued January 9, 1973

The parties agreed upon the following description, although the defendants note it is not complete and was supplemented by other evidence. Again, I shall say more about this hereafter.

This patent, a reference not considered by the Patent Examiner during the prosecution of the Garcia application, discloses a silent electric switch comprising a body having first and second ends and a cavity therein, a switch member rotatably received in the cavity of the body and a control lever for rotating the switch member between switching positions about a longitudinal axis. A pair of spaced balls biased apart by an electrically conductive spring are retained in

longitudinally extending holes in the switch member to engage conductive terminals.

This switch, it is noted, is a silent-type wall switch and not a miniature or DIP switch. It was offered as prior art, defendants contending that, while a switch very different from the Garcia switch, it embodies the combination of the Garcia claims and that its elements function in the same way, though in a different structural arrangement. I shall deal with this contention subsequently.

7.06 The Garcia patent is a "combination patent." See Sakraida v. Ag Pro, Inc., 425 U.S. 273 (1976); Great A & P Tea Co. v. Supermarket Corp., 340 U.S. 147 (1950); Hadco Products, Inc. v. Walter Kidde & Co., 462 F.2d 1265, 1269 (3d Cir. 1972). Thus it claims old elements, all previously known to one of ordinary skill in the miniature electrical switch art.*

7.07 Analyzing Claim 1 of the Garcia patent, I find that the following elements are to be found in the prior art references cited:

* Twyford's [defendants' expert] testimony is not to the contrary. (See Tr. 460). His statement of inability to construct the Garcia switch from the piece parts from the prior art references was founded upon their differences in size. This does not negate the teaching of the principles and concepts disclosed in the prior art. See also Systematic Tool & Machine Co. v. Walter Kidde & Co., Inc., 555 F.2d 342 (3d Cir. 1977).

a. Housing: while plaintiff does not contend the Garcia housing is of the essence of the alleged invention,* a finding of fact is appropriate. I find that a housing similar to it (as reflected in PX 29, which plaintiff contends reflects the Garcia combination), is to be found in the O'Dea (DX 32), Lockard (DX 63) and Ianuzzi (DX 69) patents and the SAE brochure (DX 33).

b. Rocker actuated switch: three types of miniature switches were well known in the prior art - rotary, slide and rocker actuated switches. While use of the rocker concept is not urged by plaintiff to be of the essence of the Garcia invention, I nonetheless make the finding that such a concept was well known in the prior art. See Lockard and Carbonara (DX 37) patents and SAE brochure. Moreover, inherent in such a design, i.e., a rocker actuated type switch, is a pivoting point and bearing means. As in the Garcia design,

* Plaintiff states: "The essence of the invention in the Garcia patent is the switching mechanism which provides unexpected wiping action and unexpected long life which led to its success in the marketplace." Plaintiff's critique to Defendants' Proposed Findings of Fact (PCDPF) 92. Moreover, none of the testimony of plaintiff's expert Schwab was directed to establish the non-obviousness of the Garcia housing or the use of a rocker actuated switch. The plaintiff, before the Patent Office, did not contest the Examiner's finding that Hoehn taught the housing of Garcia.

these are found in the cited prior art. I find without merit plaintiff's argument that Lockard is here distinguishable because it embodies a single shaft on which each of the rockers is pivotally mounted, whereas in Garcia each rocker includes its own shaft means engaging a bearing means. See PCDPF 12.*

c. A frame carrying contact terminals as in PX 29 is found in Ianuzzi, Lockard, O'Dea and the SAE brochure. (Tr. 407-410).

d. Contact arms: every switch presented in this case has contact terminals. It is true that in the 1970-1975 period most of the DIP switch work was in the cantilevered, flexible terminal area. See PX 7. However, axially aligned contact arms, as in the Garcia patent, are found in Ianuzzi. (Tr. 232, 408). This teaching is not diminished as pertinent prior art because the ball contactor in Ianuzzi moves across the axes of the terminal arms while the ball in Garcia (and PX 29) moves along the axes of the terminal arms.

* Repeatedly, plaintiff argues that defendants' prior art is a "different structure." This misses the point. Lockard, for example, is a DIP switch and, while different in structure, embodies prior art which, as I have noted, renders the Garcia patent obvious to one of ordinary skill in the art.

In connection with the contact terminal element, the following is significant:

1. Before any action by the Patent Examiner on the original application for the Garcia patent, plaintiff's attorney interviewed the Patent Examiner. Stipulated.

2. On October 6, 1975, after the interview with the Patent Examiner, plaintiff's attorney filed an amendment before any action by the Examiner. Stipulated.

3. In an Office Action dated November 19, 1975 the Patent Examiner rejected all of the new claims submitted with the amendment filed October 6, 1975. Stipulated.

4. In rejecting the claims, the Patent Examiner cited the Hoehn patent (DX 24) for a teaching of the housing; Sorenson (DX 23) for a teaching of a plurality of terminal sets; Meuer (DX 21) for teaching an actuator/contact structure; and Bonnaire (DX 22) for teaching use of a ball contactor. Stipulated.

5. In support of the rejection of all claims, the Patent Examiner stated that the cited references were similar types of switches in a crowded art, and it would be an obvious matter of design expediency to combine the teachings of these patents as claimed. Stipulated.

6. Following the rejection of all claims by the Patent Examiner, plaintiff's attorney again

arranged an interview with the Examiner. Stipulated.

7. On December 18, 1975 following the interview with the Patent Examiner, plaintiff's attorney filed a second amendment to the application, including further amended claims. Stipulated.

8. In that second amendment of December 18, 1975 the conductor terminals were defined as "including a pair of axially aligned terminal arms" with "terminal legs integral with said arms and extending at right angles to said arms." Stipulated.

9. In the remarks accompanying the amendment filed December 18, 1975, plaintiff's attorney emphasized that the claims defined the frame member of the switching and terminal means as including a plurality of juxtaposed sets of conductor terminals and argued that the claims define conductor terminals as including a pair of axially aligned terminal arms having spaced apart contact portions defining an open area therebetween. Stipulated. See also 15 - 16, infra.

10. In the remarks accompanying the amendment filed December 18, 1975, plaintiff's attorney argued that the conductor terminals were further defined as including terminal legs integral with the arms and which extended at right angles to the arms; and then asserted that this feature of the invention was not at all disclosed or suggested

in the prior art. Stipulated. See also 15 - 16, infra.

11. The prior art cited by the Patent Examiner or by plaintiff during the prosecution of the application for the Garcia patent consisted of U.S. patents Nos. 1,131,129 (DX 26), 1,412,002 (DX 27), 1,882,857 (DX 21), 2,246,373 (DX 28), 2,927,185 (DX 22), 3,227,820 (DX 23), 3,618,409 (DX 29), 3,684,847 (DX 24), 3,750,085 (DX 30), French patent No. 1,150,430 (DX 25), and an AMP brochure (DX 31). Stipulated.

12. A copy of the AMP publication (DX 31) was attached as an exhibit to the amendment filed December 18, 1975. Stipulated.

13. The AMP publication (DX 31) discloses a DIP switch similar to the embodiment of the DIP switch shown in Figures 1 through 5 of Lockard U.S. patent No. 3,878,344 (DX 63). Stipulated.

14. The prior art cited by the Examiner or by plaintiff during the prosecution of the application for the Garcia patent does not disclose a DIP switch having conductor terminals including a pair of axially aligned terminal arms having spaced apart contact portions defining an open area therebetween with the conductor terminals including terminal legs integral with the arms and extending at right angles to the arms.
(Tr. 374; 379-380; 802-817).

15. In the amendment filed December 18, 1975 plaintiff amended the claims to include reference to (1) "axially aligned terminal arms," and (2) "terminal legs integral with said arms and extending at right angles to said arms." (DX 2, p. 39).

16. In view of plaintiff's communication filed December 18, 1975, the Examiner now allowed the claims in the application on January 22, 1976. Stipulated. This communication read (DX 2, p. 42):

More specifically, the claims now define the frame member of the switching and terminal means as including a plurality of juxtaposed sets of conductor terminals. Further, the claims define the conductor terminals as including a pair of axially aligned terminal arms having spaced apart contact portions defining an open area therebetween. The conductor terminals are further defined as including terminal legs integral with the arms and which extend at right angles to the arms. This feature of the invention is not at all disclosed or suggested in the prior art.

17. Thus it is clear that the Examiner allowed the claims on the basis of the representation of plaintiff's attorney that the features added to the claimed combination were not "disclosed or suggested in the prior art."*

* Indeed, I find that the representation of plaintiff's attorney to the Examiner was accurate so far as the prior art in the Patent

18. However, as I have already noted in part, Ianuzzi discloses axially aligned contact arms in the same sense as they are in the Garcia patent; O'Dea and Ianuzzi each disclose a frame member supporting a plurality of sets of conductor terminals and each set of conductor terminals includes a pair of axially aligned terminal arms having spaced apart contact portions with an open area therebetween (Tr. 380-381); and the SAE brochure discloses a plurality of juxtaposed sets of conductor terminals having axially aligned terminal arms having spaced apart contact portions and an open area between them. (Tr. 381, 823).

19. I further find that Ianuzzi, O'Dea and the SAE brochure disclose terminal legs integral with the terminal arms and extending at right angles to the same. (Tr. 381, 822-823).*

(footnote continued from preceding page)

Office record is concerned. It could be argued that a determination of obviousness under 35 U.S.C. § 103 is now reduced to nothing more than a consideration of the distinguishing features incorporated into the claims by the amendment. See Burland v. Trippe Mfg. Co., 543 F.2d 588 (7th Cir. 1976). I will not, however, so limit my consideration of the Garcia patent.

* This finding is based upon my accepting and crediting the testimony of Mr. Krieg of Stanford Applied Engineering (Tr. 970, et seq.), and finding, as I do, that both the SAE brochure (DX 33) and Drawing (DX 34) were published prior to December 18, 1973.

20. Thus the disclosures of Ianuzzi, O'Dea and the SAE brochure are of details added by the plaintiff to the claimed combination and relied upon to obtain the Garcia patent, which features were not disclosed in any prior art cited by the Examiner or by the plaintiff during the prosecution of the application for the Garcia patent.

21. Plaintiff's non-obviousness contention is in part founded upon its position that the terminal elements of the Garcia design are inflexible or rigid, which enhances the reliability of the switch in that the terminals can be made of more rugged materials than used in DIP switches using flexible cantilevered terminals.* See Plaintiff's Proposed Findings of Fact 6.07 - 6.12.

22. While it is true that the GRAYHILL switch has rigid terminal contacts, the Garcia patent does not make specific reference to such rigidity; and the claims do not mention rigidity or inflexibility of the terminal conductors. Plaintiff's witnesses, Schwab and Kikta, testified that rigidity was implied by the reference to the terminals being fixedly mounted in the housing. (Tr. 306-307). Schwab testified about several

* Thus plaintiff repeatedly disparages defendants' cited prior art as embodying contact terminals that flex and bend during switch operation. See PCDPF 17, 19, 20, 43.

flexible conductor terminals that are fixedly mounted. (Tr. 614, 646; 710-711). Thus I find that the words "fixedly mounted" do not mean that the terminals themselves are "rigid." I also find that the inferences Kikta and Schwab sought to draw as to "rigidity" from other language in the patent are without sound basis. Rigidity could have and should have been expressly claimed. Accordingly, I find that plaintiff's effort to avoid the impact of defendants' prior art on this basis must fail.

23. On the other hand, even if I were to find that the Garcia patent did effectively claim rigid terminal contacts, I would find such a feature was taught by the prior art, specifically by the Ianuzzi patent. See also 7.14, infra.

e. Ball contactors: while Kikta was skeptical about the use of a ball contactor, I find that the prior art taught the use of a ball contactor to make and break switch contacts, as follows:*

* It has been stipulated that electrical switch mechanisms utilizing spring-loaded ball contactors were well known in the art when the Garcia application was filed, as evidenced by the following patents: Gordon, Hendricks, Lodge, Pearce, Johnson ('722), Bonnaire, Happe, Johnson ('929), Carbonara and Ianuzzi.

1. O'Dea patent (Tr. 382-383; 410-412).
2. Hendricks patent (DX 27) (Tr. 410-412).
3. Ianuzzi patent (Tr. 410-412).
4. Bonnaire patent (DX 22) (Tr. 383-384).
5. Gordon patent (DX 26).
6. Lodge patent (DX 28) (Tr. 417).
7. Pearce patent (DX 35).
8. Johnson patent (DX 40).
9. Happe patent (DX 42).
10. Johnson patent (DX 39).
11. Carbonara patent (DX 37).

O'Dea, Hendricks and Ianuzzi show a plurality of spring-loaded ball contactors, Hendricks and Ianuzzi showing them in blind holes in an actuator. Bonnaire also shows a spring-loaded ball contactor in a blind hole in a switch actuator of a rocker type.

7.08 All elements of the claims of the Garcia patent are disclosed in the prior art. (Tr. 380-384; 406-426; 251-254; 822; 823; 848).

7.09 Each element of the plaintiff's claimed combination in the Garcia patent performs its usual function and in its normal and expected manner; and there is no synergistic result from combining these old elements, that is, the combination of elements performs and operates as no more than the expected sum of the elements. Thus, for example, the usual function of the spring-loaded ball contactor is to close the space between the contact arms of the terminals to close the circuit and to move out of contact with one or both of the contact elements when the actuator

is operated to open the switch, and to provide a detent action.* See O'Dea (Tr. 821-822); and Hendricks, Bonnaire, Pearce and Ianuzzi (Tr. 411-413; 792-795). See also Ianuzzi deposition, pp. 21-22, DX 89-91; and see Spring 13 in the Solomon patent (PX 7C) which serves the same function as the spring in the GRAYHILL switch. (Tr. 704-705).

7.10 Functional characteristics of life expectancy, wiping action and "tease-proof reliability" afforded by a positive detenting action are important in the design of any miniature switch. (Tr. 113; 624-626). There is no contention that the Garcia design makes for better detenting** or better "tease-proof reliability" by reason of an unexpected result from its combination of old elements.

7.11 Plaintiff contends that the Garcia elements do not function in their usual or expected manner and that the combination has a synergistic result, that is, that the combination exceed the sum of the individual elements. See PCDPF 48-49. I find otherwise.

* It will be recalled that the Examiner cited Bonnaire as teaching use of ball contactors. (DX 2, pp. 33-34).

** See Tr. 793-795; Bonnaire (DX 22); Hendricks (DX 27); Lodge (DX 28). Garcia, it is stipulated, was aware of spring-loaded ball detents in switches.

7.12 In asserting that the combination of elements in the Garcia design does not operate in a normal or an expected manner (PCDPF 49), plaintiff states "[t]he wiping action was not expected, nor was the long life expected."

The Garcia patent (PX 1) does not explain how "wiping" is accomplished (Tr. 779), except to say that the sliding ball contact provides a positive wiping action. (PX 1, col. 1, l. 65-68).

The Garcia patent does not make any reference to "rolling" to describe the spring-loaded ball contact. Stipulated.

In the absence of any rational, clear and precise explanation for the "wiping" action, I find it is inherent in any switch with a spring-loaded ball contactor cooperating with fixed conductor terminals.* See Finding 7.07(e). Moreover, I find that in Ianuzzi the conductor terminal arrangement is the same as in the Garcia patent.

* The closest plaintiff comes to explaining the "wiping" action of the GRAYHILL switch is in its Proposed Finding of Fact 6.04: "... the unexpected wiping action [is] achieved by the specific structure of the ball contactor - fixed conductor terminals. . . ." Also, Schwab speculated that the spring "brakes" the ball so that its rolling action also becomes a "sliding" action. He emphasized that this was only speculation on his part. (Tr. 783). Nothing in the patent says "wiping" is a function of the spring. (Tr. 783).

7.13 I also find that the claimed long life is not surprising or unexpected. The GRAYHILL switch substituted fixed contactor terminals for the thin and flimsy materials which are necessarily used (to prevent deformation) in switching mechanisms where the terminals must bend and flex. If, as plaintiff contends, Garcia contemplated rigid conductor terminals, as in the GRAYHILL switch, the same is true as to the Garcia design.

7.14 As I have noted (7.07(d)), I have found that the Garcia patent does not claim, expressly or impliedly, as part of the alleged invention, rigid or inflexible terminal conductors. However, even if I were to adopt plaintiff's argument, that is that rigid contactor terminals are claimed (through indirect references), I would still find that the Garcia patent was a combination of old elements, in that rigid terminals are old, as in Cooper (DX 26); Ianuzzi (DX 39); Hendricks (DX 27); Lodge (DX 28); and Meuer (DX 21). Cooper, Hendricks, Lodge and Meuer were before the Examiner in the Patent Office. Neither the initial application for the Garcia patent, nor the application as amended, ever mentioned or claimed that a feature of the alleged invention which distinguished it from the prior art was that the conductor terminals were rigid and inflexible. Indeed, in the first rejection, on November 19, 1975, the Examiner cited Meuer "for teaching an

actuator/contact structure." When plaintiff filed amendments, still no contention of rigidity was made.

7.15 The Ianuzzi patent discloses a miniature electrical switch satisfying all of the conditions of Claim 1 of the Garcia patent except it has only one actuator and not a plurality of actuators; the actuator is slidable and not pivotable; and the ball contacts both portions of the terminal arms or none at all. (Tr. 426).

7.16 Thus Claim 1 of the Garcia patent reads on the miniature switch disclosed in Ianuzzi (Tr. 419-425; DX 77, 78); and the differences between the two would be readily apparent to one of ordinary skill in the art. (Tr. 435 et seq.).

7.17 The Carbonara patent (DX 37), issued January 9, 1973, while it discloses a different type of electrical switch, substantially satisfies the definition of Claim 1 of the Garcia patent. (DX 37; DX 66; DX 67; Tr. 439, 446).

7.18 The Carbonara patent satisfies all of the conditions of Claim 1 of the Garcia patent except that it has only one actuator and one opening in the cover for the actuator. (Tr. 446).

7.19 For the foregoing reasons I find the Garcia patent is invalid under 35 U.S.C. § 103.

7.20 In order to make available to an appellate court my findings as to "secondary

considerations," I find:

a. Over 3,000,000 units of the GRAYHILL DIP switch have been sold since the first sales in 1974. Highly critical consumers such as Western Electric have purchased large quantities of the GRAYHILL DIP switch. GRAYHILL has more than 500 customers, both U.S. and foreign, for its DIP switch, including companies like National Cash Register, IBM, Control Data, Honeywell, and others. The impact of the GRAYHILL DIP switch on the marketplace has been significant. In 1974, the first sales year, about 3,700 DIP switches were sold. In 1975 the yearly sales increased to about 745,000 units. Sales for 1976 reached about 2,400,000 units. Stipulated.

b. While Schwab testified he would not have expected the switch to work properly by using a ball contactor (Tr. 673), I must reject his testimony in view of the extensive prior art related to spring-loaded ball contactors. See also Ianuzzi deposition (DX 91, p. 23).

7.21 Plaintiff's expert, Pierre Schwab, testified in very general fashion that the publications which were first listed by defendants in

their 35 U.S.C. § 282 notice, and thereafter introduced at trial, were cumulative to and no more pertinent to Garcia than the publications which were before the Patent Office during the prosecution of the Garcia patent. (Tr. 600). On the other hand, he also stated that the Cooper, Gordon, Hendricks, Lodge and Bonnaire patents, which were before the Patent Office, were non-analogous.* Of the remaining six publications before the Patent Office, only the AMP Publication (DX 31) was singled out by Schwab for detailed and comparative analysis with the defendants' cited prior art. Thus he found the defendants' prior art of O'Dea (DX 32), the SAE Publication (DX 33, 34) and Lockard (DX 63) "cumulative" to the AMP Publication.** (Tr. 603-611). Sorenson

* Interestingly, in view of Schwab's disparagement of these publications, all but Bonnaire were called to the Examiner's attention by the plaintiff. (See DX 2, p. 26; Tr. 718). Bonnaire was cited by the Examiner to teach the use of a ball contactor. (DX 2, pp. 33-34).

** The AMP Brochure discloses a DIP switch having a switching mechanism embodying cantilevered leaf spring conductor terminals which flex during the switch operation and about one another to close the circuit. (Tr. 603-605).

Although the SAE Brochure shows a DIP switch structure which, like the AMP switch (Tr. 606), is rocker actuated and employs a switching mechanism employing conductor terminals which flex up and down or bend during the switch

(DX 23) was analyzed, but only in terms of whether it and Lockard (or AMP) would, if combined, lead a person of ordinary skill in the art to Garcia.

(Tr. 626-630). In this regard, Mr. Schwab labeled Sorenson and Lockard as non-pertinent prior art, pointing out that both lack a rocker actuator and do not use a ball contactor. Id. Similarly, Bonnaire was analyzed, but only in terms of whether it and Ianuzzi would lead the person of ordinary skill to Garcia. (Tr. 631-632). Again, in so doing, Bonnaire was dismissed by Schwab as non-pertinent prior art. Id.

I regret I must reject Schwab's generalization that defendants' prior art was merely "cumulative" or no more pertinent to Garcia than was the prior art cited by plaintiff to the Examiner, and Bonnaire. Aside from the doubt cast on the validity of his contention by his characterization of so much of the Patent Office prior art as "non-analogous," he fell short of lending conviction to his premise by failing to review each of the

(footnote continued from preceding page)

operation (Tr. 605-608), the SAE Brochure switch has axially aligned terminal arms, spaced apart contact portions, and integral legs at right angles to the arms, unlike the prior art before the Patent Office. (Tr. 802-817; 823). The rocker carries a contactor which is moved into the space between the arms to close the circuit and engages only one arm to open the circuit.

Patent Office publications on the one hand, and comparing each with the defendants' cited prior art, element by element.

Left then to my own analysis of the prior art before the Patent Office, I repeat my earlier findings [7.07(d) 14 through 20] and find that the publications cited by defendants are more pertinent to Garcia than the prior art before the Patent Office. Accordingly, the statutory presumption of validity is weakened, if not destroyed; and defendants have sustained their burden of proving obviousness under 35 U.S.C. § 103.*

VIII. THE GRAYHILL DIP SWITCH, WHICH PLAINTIFF CONTENDS IS EMBODIED IN THE GARCIA PATENT, WAS NOT "ON SALE" OR IN "PUBLIC USE" MORE THAN ONE YEAR PRIOR TO THE FILING OF THE PATENT APPLICATION FOR THE GARCIA '090 PATENT.**

8.01 Findings of Fact, 405, 406, 407, 408 and 409 are incorporated herein by reference.

8.02 Defendants contend, inter alia, that the GRAYHILL DIP switch invention was "on sale"

* See 35 U.S.C. § 282; Hadco Products, Inc. v. Walter Kidde & Co., 462 F.2d 1265 (3d Cir. 1972).

** Plaintiff, of course, contends as it must that the GRAYHILL switch is embodied in the Garcia patent. The discussion under this heading which follows assumes that to be the case.

or in "public use" more than one year prior to the filing of the Garcia patent application, thereby invalidating the Garcia patent under the provisions of 35 U.S.C. 102(b). Stipulated.

8.03 35 U.S.C. §102(b) provides that a person shall be entitled to a patent unless the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States. Stipulated.

8.04 This section of the Patent Laws establishes a statutory bar by providing a one-year period within which an inventor must act on penalty of loss of right to patent, whatever may have been his right to patent at the time he made the invention. Stipulated.

8.05 As concerns the Western Electric aspect, concurrently with the initiation of the aforementioned testing program, John Udisches, then marketing manager for GRAYHILL, sent to Frank Tyliniski, a manufacturer's representative for GRAYHILL, a single completely assembled prototype DIP switch of the Garcia design and an outline drawing of the switch for the purpose of showing same to engineers at Western Electric Company's Springfield, New Jersey, plant to obtain their comments and determine if there

were any "rocks" in the design. (PX 22-1, PX 22-2; Tr. 881-882, 885-887, 931, 935, 938-939, 941).

8.06 It was the understanding of Mr. Udisches that Mr. Tyliniski would handle the GRAYHILL prototype DIP switch on a confidential basis and show it to the Western Electric engineers on a confidential basis. (Tr. 884). Mr. Tyliniski maintained that confidentiality. (Tr. 938-942). At this time, Mr. Tyliniski had no knowledge of the inner workings of the switch, and therefore he could not explain to the Western Electric engineers any structural details of the switch. The Western Electric engineers, Messrs. Rudloff and Twesten, felt the detenting action of the switch and gave their comments, but they did not disassemble the switch or connect it into any circuitry. Mr. Tyliniski was present at all times when Messrs. Rudloff and Twesten were examining the switch, and the switch was always maintained in the presence of Mr. Tyliniski. (Tr. 938, 939, 940).

8.07 Mr. Tyliniski returned the prototype switch and outline drawing to GRAYHILL immediately following the showing of same to the Western Electric engineers in response to the request made in the letter from Mr. Udisches. (PX 22-1; Tr. 940).

8.08 The prototype model shown to Western Electric engineers was maintained in the possession

of GRAYHILL's representative, Frank Tylinski, from the time it was received from GRAYHILL until it was returned to GRAYHILL (Tr. 887, 940).

8.09 At the time of the showing by Frank Tylinski to the engineers, GRAYHILL did not have a pricing schedule for the DIP switch, nor was it in the GRAYHILL Product line, nor was there any evidence of any offer to sell DIP switches of the type illustrated by the prototype model. Tylinski did not take any request for the purchase of such DIP switches. (Tr. 903, 916, 938, 943). The first pricing schedule for the GRAYHILL DIP switch was completed February 16, 1974 and is represented in PX 23.

8.10 Except for Western Electric, there was no other showing of the GRAYHILL DIP switch to those outside of the GRAYHILL organization until a public showing was made to the trade at the IEEE meeting in March 1974. (PX 11-6; Tr. 893). As set forth in finding 4.09, the first sale was not until September 1974.

8.11 The GRAYHILL switch was not publicly used or on sale more than one year prior to the filing date of the application for patent. The defense of invalidity under 35 U.S.C. § 102(b) fails.

IX. PLAINTIFF'S AMENDMENTS TO ITS DRAWINGS.

9.01 Defendant relies heavily on certain alleged deficiencies in the drawings filed with the Garcia application. An amendment to the drawings was filed October 6, 1975, prior to any official action by the Patent Office, and approved by the Examiner when the application was allowed. (PX 2, p. 22, PX 35, p. 12). Stipulated.

9.02 Thus, in the patent, fig. 1 shows conductor terminals aligned with and embedded in insulator bars (DX 96, 97; Tr. 531); the actuators cannot be assembled in the cover; and the base will not close onto the cover. (DX 7, DX 79; Altieri Dep. p. 116; DX 96; Tr. 528-531). These were drafting errors. (Tr. 295). Plaintiff's delay in correcting them was due to new counsel coming into the matter. (Tr. 296).

9.03 Defendants assert that the correction of these errors by plaintiff introduced "new matter" into the application; that such "new matter" could only be added through a new patent application; and that the claims of the Garcia patent are thus invalid. On this issue, like all others involving patent validity, the presumption is in favor of plaintiff and defendants carry the burden of proving the contrary. (35 U.S.C. § 282). Stipulated.

9.04 The statutory requirement for a drawing is straightforward: "When the nature of the case admits, the applicant shall furnish a drawing." (35 U.S.C. § 113). In recognition of the fact that inadvertent errors are often made, the regulations of the Patent Office permit amendment of the patent drawings, including amendment before the first examination by the Examiner. (37 C.F.R. §§ 1.115, 1.117). Indeed, if an inaccuracy or lack of correspondence between the specification and drawings must be amended and revised. . . ." (37 C.F.R. § 1.117). Stipulated.

9.05 The Patent Office rules provide that such amendments to the drawings are proper if the amendment or change conforms to the specification and the drawings as originally filed ". . . as it was at the time of filing application." (37 C.F.R. § 1.118). The Manual of Patent Examining Procedure further states: "Amendments to the drawing held by the examiner to contain new matter are not entered until the question of new matter is settled." [MPEP § 714.19(10)] In cases where amendments to the drawings have been entered, the determination of the Patent Office to permit such amendments is presumptively correct.* Stipulated.

* See Triax Co. v. Hartman Metal Fabricators, Inc., 479 F.2d 951, 956-57 (2d Cir. 1973); Baldwin-Lima-Hamilton Corp. v. Tatnall Measuring Systems Co., 169 F. Supp. 1, 21 (E.D. Pa. 1958), aff'd 268 F.2d 395 (3d Cir. 1959).

9.06 The Patent Examiner assigned to examine the Garcia application testified by deposition. The Examiner, Mr. Hohausser, recalled that he entered the amendment to the drawing at the time he determined that the application contained allowable claims. (PX 35, pp. 12, 37; see MPEP § 608.02(p), § 608.02(s), § 714.19(10)). He testified that he has a usual practice which he follows in connection with entering amendments to drawings and that, as part of that practice, he considers the question of new matter in accordance with the Patent Office Rules and the Manual of Patent Examining Procedure and the Patent Statutes. (PX 35, pp. 38, 42). Stipulated.

9.07 As filed, the Garcia patent application contained seven figures. (PX 2, p. 19). Figure 1 is an exploded view showing parts of the switch in accordance with one embodiment of the invention. As illustrated in Figure 1 and explained in the original patent specification, conductor terminals 13, 14 are mounted to a frame member 27. (PX 2, pp. 9, 19). Stipulated.

9.08 Figure 1 shows this frame member having terminals 13, 14 molded inside the transverse bars of the frame. (Tr. 531; DX 96, DX 97).

9.09 In drawing the structure of Figures 2, 3 and 5 - 7, the draftsman failed to show the frame member as a separate part as shown in Figure 1. Stipulated.

9.10 Instead, the draftsman showed terminals 13, 14 located adjacent a structure 27 which is shown integral with cover 12.

9.11 Figure 1 shows the conductor terminals embedded in the insulating bars (DX 96, 97; Tr. 531). The specification (DX 2, p. 9) states that each "of the conductor terminals is mounted to a frame member 27"; this complies with Figures 2, 3, 5, 6 and 7 showing the frame 27 integral with the housing. At page 12 (DX 2) "the conductor terminals are fixedly mounted within the switch housing 10." The housing 10 comprises the cover 12 and base 11.

9.12 Thus, there were several inconsistencies between several figures of the drawings and the structure shown in Figure 1, and what was disclosed in the specification.

9.13 I must reject the plaintiff's argument that all of these inconsistencies would have been apparent to one skilled in the art, as well as its other arguments in its Proposed Findings of Fact 9.07.

Plaintiff takes the position that the Examiner "understood the deficiencies in the drawings to be clearly correctible." Ibid. The difficulty with this position is that the revisions were submitted to the examiner with a statement which was not a detailed analysis, but rather

simply that it was being done "to render the figures consistent with one another." See also Hohauser Dép. (Examiner), DX 83, pp. 26, 43, which hardly supports the plaintiff's contention that the Examiner studied the changes, made his own evaluation of them, and found support for them in the drawings or specifications or both.

9.14 Kikta's analysis at trial of the revisions made, and their support, is relied upon by plaintiff. (Tr. 287-295; PX 67). I cannot accept this analysis at face value. On cross-examination Kikta conceded that he relied upon the fact that he had seen the actual exhibit in piecing together the various supports for the changes. Indeed, as even plaintiff's analysis demonstrates, he had to concede that in certain instances he relied upon his overall knowledge of the actual GRAYHILL switch. (Tr. 340-341). See also Tr. 352). It is clear no such detailed justification as PX 67 was given to the Examiner.*

9.15 Figure 4 of the application was described in the specification as filed as ". . . a side elevation view showing the recesses in the cover portion of the switch cover portion. . . ." (PX 2, p. 8). Figure 4 is a perspective

* Kikta agreed there was no justification for the addition of the block of Figures 1, 2, 3, 5, 6 and 7. (Tr. 303).

view. Thus, the specification was amended in accordance with 37 C.F.R. § 1.117 ". . . to secure correspondence between . . . the specification and the drawing. . . ." (PX 2, pp. 22, 23, 26). The correction to the description of Figure 4 is not new matter. Stipulated.

9.16 In the amendment to the drawing, a block-like structure, having a rectangular cross section, was added to Figures 2 - 3 and 5 - 7. The structure is shown adjacent shoulder portions 31 of conductors 13, 14 and the inner face of end plate 11. This block-like structure is not an element of any of the claims of the Garcia patent in suit; nor is it described in the specification. Stipulated.

9.17 I find that the parts shown in Figure 1 of the Garcia application as filed cannot be properly assembled and, if they were assembled, they would be inoperative. See Finding of Fact 9.02, supra.

9.18 The switches shown in Figures 2, 3, 5, 6 and 7 as filed in the original application for the Garcia patent cannot be assembled, and, if assembled, the switches would not operate. The openings in the housing are not large enough to permit assembly of the rockers. (DX 2, p. 19; DX 79, Altieri Dep., p. 116-118; DX 81, Garcia Dep., p. 108-109; Tr. 513).

9.19 Amendments to the drawings requested October 6, 1975 changed Figures 2, 3, 5, 6 and 7 to show frame member 27 separate from and not integral with cover 12 as shown in the original drawings. Stipulated.

9.20 Moreover, Figure 4 cannot be related to other Figures.

9.21 In the drawings filed with the original application for the Garcia patent, cover 12 as shown in Figure 4 has a longitudinal slot along one side of the supports 18; said slot does not appear in Figures 2, 3, 5, 6 or 7.

9.22 Figure 4 of the Garcia application as originally filed has ambiguities which make the drawing uninterpretable.

9.23 To be compatible with Figures 2 and 3 in the drawings of the original Garcia application, Figure 4 would have to be revised to look like defendants' Exhibit 102. (Tr. 516).

9.24 The specifications do not correct deficiencies in the drawing.

9.25 Figures 2, 3, 5, 6 and 7 of the drawings filed with the application for the Garcia patent do not show conductor terminals 13 and 14 mounted to the frame member 27 as described in the specification. Stipulated.

9.26 It is not possible by following the instructions for assembling a switch as set forth

in the original Garcia application (DX 2, p. 9, last paragraph) to construct a switch like that shown in Figure 2 of the drawings submitted with the Garcia application.

9.27 Based on Figures 1, 2 and 3 as well as the description in the specification, Figure 4 of the original Garcia application should look like the drawing in defendants' Exhibit 102. (Tr. 516).

9.28 To find support for amendments to the original drawings of the Garcia application, plaintiff's Vice President Kikta referred to four parts of the description in the specification and five times referred to the drawings themselves; for changes in Figure 1 he referred to Figures 2 and 3; for changes in Figure 2 he referred to Figure 3, for changes in Figures 2, 3, 5, 6 and 7 he referred to Figure 1; for changes in Figure 4 he referred to Figures 5 and 6; for changes in Figure 6 he referred to Figure 1. (Tr. 300-304).

9.29 Accordingly, plaintiff's patent is invalid because the original application failed to disclose an operative switch. I do not find such amounted to fraud upon the Patent Office.

X. INFRINGEMENT*

10.01 GRAYHILL has the burden of proving that RCL's accused DIP switch infringes the Garcia patent. Stipulated.

10.02 The standard for infringement is not the embodiment of the patent but rather the claims of the patent. GRAYHILL has charged defendants with infringement of Claims 1 - 5, 9 and 10. Stipulated.

10.03 Finding of Fact 6.01 is incorporated herein by reference.

10.04 PX 29 illustrates the RCL DIP switch charged with infringement of the claims of the '090 patent as described by plaintiff's witness, Mr. Kikta, who personally has examined actual samples of RCL DIP switches over a period of time from the introduction of the RCL switch into the marketplace. (Tr. 126-129).

10.05 Defendants' first defense to infringement is based upon the particular wording of Claim 1 with respect to the axial alignment of the arms of the conductor terminals. Defendants contend that this limitation is not present in the RCL DIP switch structure charged with infringement. Stipulated.

* I make this finding so that on appeal, if my holding on validity is reversed, the appellate court will not have to remand for an infringement determination.

10.06 The inventor has elected to define the conductor terminals 13 and 14 in the claims in terms of a leg, an arm, and a contact portion. These terms are consistent with the structure of the conductor terminals shown in the drawings and described in the specification.

10.07 Although the term "axially aligned" does not specifically appear in the specification, it is evident from the drawings and the written description of the invention that this term aptly describes the arrangement of the arms of the conductor terminals. (Tr. 293, 309, 311).

10.08 An axis is defined as a straight line with respect to which a body or figure is symmetrical. Stipulated.

10.09 The arms in both the device of the Garcia patent and the RCL switch are aligned along such an axis thereby structurally distinguishing the conductor terminals from conductor terminals which are shown, for example, in the AMP switch (PX 6E), as well as the SAE switch (DX 33).

10.10 An examination of the RCL switch as shown in PX 29 demonstrates that that switch also contains the following elements of dependent Claims 2 - 6 and 9 - 10: (a) openings in the base portion through which the terminal legs extend; (b) one of said terminal arms including

means for coacting with the ball contactor to positively cause positioning of the actuator in either said first or second position; (c) actuator[s] in the form of a rocker member; (d) openings in the cover portion to retain the frame member and the actuators within the cover portion and close the cover portion; and (f) separating insulating bars between each set of terminal conductors. Stipulated.

10.11 As I have already found, the Garcia patent does not claim that the terminal arms are rigid or fixed. On the other hand, it is clear that the RCL switch, like the GRAYHILL switch, has rigid or fixed arms. Given the significance of this difference, I find that the defendants have not infringed the Garcia patent.

XI. FRAUD ON THE PATENT OFFICE.*

11.01 Defendants' defense of inequitable conduct (fraud) is based upon contentions that (1) plaintiff knowingly submitted the original

* Proof of fraud must be "clear, unequivocal and convincing and a mere preponderance of evidence that leaves the issue in doubt may not properly be a basis for a finding of fraud." Baldwin-Lima-Hamilton Corp. v. Tatnall, 169 F. Supp. 1, 25 (E.D. Pa. 1958), aff'd, 268 F.2d 395 (1959), cert. denied, 361 U.S. 894. A deliberate misrepresentation in the Patent Office must be found. Cf. Monsanto Co. v. Rohm & Haas Co., 456 F.2d 592 (3d Cir. 1972).

Garcia application with an inoperative disclosure; (2) plaintiff knowingly withheld from the Patent Office the facts concerning potential public use and/or sale more than one year before the application; (3) plaintiff knowingly withheld from the Patent Office the SAE Brochure disclosing precisely the arrangement of the conductor terminals as set forth in the claims as amended to obtain allowance; (4) plaintiff knowingly canceled the original claims and substituted claims to a different invention more than one year after the GRAYHILL switch had been in public use; and (5) plaintiff submitted to the Patent Office a supplemental oath executed by Garcia and asserting facts contradicted by Garcia's deposition of September 21, 1976. Stipulated.

11.02 I do not find that the submission of the Garcia application with an inoperative disclosure constituted or amounted to fraud.

11.03 I do not find that the plaintiff knowingly withheld from the Patent Office the facts concerning potential public use and/or sale more than one year before the application.

11.04 I do find plaintiff withheld from the Patent Office the SAE Brochure.

11.05 Prior to filing the amendment of December 18, 1975, prior to the interview with the Patent Examiner, and prior to filing the

application for the Garcia patent, plaintiff was aware of the SAE Brochure. Plaintiff's attorney did not inform the Patent Examiner about the SAE Brochure. Stipulated.

11.06 The SAE Brochure was effective prior art and should have been disclosed with the December 18, 1975 amendments, in view of what the Brochure discloses and the nature of the amendments. Failure to do so, however, did not amount to fraud.

11.07 I do not find plaintiff's conduct as to (4) of 11.01 constitutes fraud on the Patent Office.

11.08 I do not find the incident involving Garcia's supplemental oath constitutes fraud on the Patent Office.

XII. ANTITRUST AND UNFAIR COMPETITION.

12.01 Count III of defendants' counterclaim charges GRAYHILL with violating Section 2 of the Sherman Act, 15 U.S.C. 2. The basis of this violation is asserted to be GRAYHILL's alleged fraudulent procurement of the Garcia patent and GRAYHILL's use of the patent as a "sales tool" in an attempt to enlarge GRAYHILL's share of the DIP switch market. Stipulated.

Law: The contention set forth in 12.01 bespeaks a "Walker Process" claim. Walker Process Equipment Co. v. Food Machinery and Chemical Corp.,

382 U.S. 172 (1965).

In Walker Process the Court held that the enforcement of a fraudulently procured patent could form the basis for a private treble damage action provided certain requirements were met. In particular, the Court indicated that the violation is not per se, i.e., it is necessary to appraise "... the exclusionary power of the illegal patent claim in terms of the relevant market for the product involved." 382 U.S. at 177.

There are two essential elements to a "Walker Process" action: (1) the patent must have been obtained by fraud; and (2) the patent must be used to lessen or destroy competition in the marketplace.

12.02 As I have already found, plaintiff did not practice fraud in obtaining the Garcia patent.

12.03 Although it is clear that plaintiff competes with AMF in the marketing of miniature DIP switches, and that plaintiff has captured a segment of the market, defendants have failed in their proofs as to (a) relevant market; (b) the impact thereon; (c) the ability of plaintiff to lessen or destroy competition; and (d) the actual effect upon competition. Indeed, given defendants' contentions as to prior art, and that the GRAYHILL switch is nothing more than a combination of old elements, it is difficult to perceive how defendants could hope to succeed in their claim that

with this old combination plaintiff has been able substantially to affect competition.

12.04 I find no evidence to support a claim of antitrust violation, thus Count III of the counterclaim must be dismissed.

12.05 In Count II of the counterclaim, defendants have alleged that GRAYHILL has unfairly competed by notifying RCL and RCL's customers of the Garcia patent application and informing them of potential patent infringement. The effect, according to defendants, is that RCL's customers have been intimidated into refraining from ordering and purchasing AMF's products which use MICRO-PRODUCTS' switches. Stipulated.

12.06 This court has previously held under similar circumstances that "[a] patent owner has a right to notify persons suspected of infringement." Anchor Plastics Co., Inc. v. Dynex Plastics Corp., 363 F. Supp. 582, 603 (D. N. J. 1973). "A good faith belief that a patent is being infringed, particularly when promptly followed up by filing a lawsuit in good faith, is a defense to a charge of unfair competition." Airtex Corp. v. Shelley Radiant Ceiling Co., 190 U.S.P.Q. 6, 14 - 15 (7th Cir. 1976). Stipulated.

12.07 The evidence does not sustain defendants' charge that GRAYHILL attempted to compete unfairly in the marketplace. Indeed, the facts

are quite to the contrary. The present suit for patent infringement was filed the day after the patent issued. In light of the evidence presented by defendants' own engineers that the accused infringing product was a direct copy of GRAYHILL's switch, and plaintiff's good faith belief that the defendants were infringing the Garcia patent, I find that plaintiff acted reasonably and within the law, notwithstanding that I have here found invalidity of the patent and non-infringement.

12.08 An element of the unfair competition count, as with any tort, is the damage suffered by defendant. Defendants have failed to show that sales were lost to them as a result of GRAYHILL's charges of infringement and the dollar amount of such sales. Indeed, defendants objected to providing discovery of such information stating:

Information relating to the amount of sales of defendant's RCL DIP switches would be relevant only if the Court determines that defendant has any liability for alleged infringement of the patent in suit. Damages for any alleged infringement by defendant need only be determined if and when any actual liability is found.

AMF's Answer to Interrogatory 15d.

12.09 Defendants have failed to meet their burden of proof on the issues raised in Count II of the counterclaim; accordingly, the court finds for plaintiff and against defendants on this issue, and the relief prayed for therein is denied.

CONCLUSIONS OF LAW

I. PLAINTIFF'S PATENT IS INVALID IN VIEW OF THE PRIOR ART.

1. The court has jurisdiction of the parties and the subject matter and has venue of this action.

2. A patent is presumed valid and the burden of proving invalidity by clear and convincing proof rests upon the person challenging validity. 35 U.S.C. § 282; Universal Athletic Sales Co. v. American Gym, Recreational and Athletic Equipment Corp., Inc., 546 F.2d 530 (3d Cir. 1976); Trio Process Corp. v. L. Goldstein's Sons, Inc., 461 F.2d 66, 70 (3d Cir. 1972), cert. denied, 409 U.S. 997 (1972).

3(a). The presumption of validity is weakened, if not destroyed, where, as here, there is pertinent prior art not considered by the Patent Office. Hadco Products, Inc. v. Walter Kidde & Co., 462 F.2d 1265 (3d Cir. 1972).

3(b). Where the new art cited by defendants is no better than the art cited by the Patent Office, the usual presumption of validity is strengthened. Universal Athletic Sales Co. v. American Gym, Recreational & Athletic Equipment Corp., Inc., 546 F.2d 530 (3d Cir. 1976); Trio Process Corp. v. L. Goldstein's Sons, Inc., 461 F.2d 66, 70 (3d Cir. 1972), cert. denied, 409 U.S. 997 (1972).

4. The tests of patentability are novelty, utility and unobviousness. At issue here is whether the Garcia switch was unobvious.

5. The trial court in analyzing obviousness or non-obviousness must determine the scope and content of the prior art, ascertain the differences between the prior art and the claims at issue, and resolve the level of ordinary skill in the pertinent art. Graham v. John Deere Co., 383 U.S. 1 (1966); Frank W. Egan Co. v. Modern Plastic Machinery Co., 387 F.2d 319, 323-24 (3d Cir. 1967); Jones Knitting Corporation v. Morgan, 361 F.2d 451, 458 (3d Cir. 1966); Anchor Plastics Company, Inc. v. Dynex Industrial Plastics Corp., 363 F. Supp. 582 (D. N.J. 1973), aff'd, 492 F.2d 1238 (3d Cir. 1974).*

6. Determination of patentability of a combination patent requires scrutinizing the claimed combination with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements; such a patent must create a synergistic effect, one in which the combination of elements results in an effect greater than the sum of the several elements taken separately. Sakraida v. Ag Pro, Inc., 425 U.S. 273 (1976); Anderson's-Black Rock v.

* See also Systematic Tool & Machine Co. v. Walter Kidde & Co., Inc., 555 F.2d 342 (3d Cir. 1977).

Pavement Salvage Co., 396 U.S. 57 (1969); Hadco Products Inc. v. Walter Kidde Co., 462 F.2d 1265 (3d Cir. 1972).

7. Where a patent is obtained by emphasizing specific features of the invention over prior art considered by the Patent Examiner, the validity of the claims of the patent under 35 U.S.C. § 103 depends on whether these distinguishing features are obvious to one of ordinary skill in the art. Graham v. John Deere Co., 383 U.S. 1 (1966); Burland v. Trippe Mfg. Co., 543 F.2d 588 (7th Cir. 1976).

8. An inventor is charged with knowledge of all that the prior art, taken as a whole, discloses with respect to the subject matter of the invention; a person skilled in the art is further presumed to have had at his disposal all relevant prior art constructions and patents. Fruehauf Corp. v. International Terminal Operating Co., Inc., 183 U.S.P.Q. 526 (D. N.J. 1973), aff'd per curiam, 184 U.S.P.Q. 266 (3d Cir. 1974).

9. Obviousness under 35 U.S.C. § 103 can be shown by combining elements of several prior art devices, it is not necessary to find all the elements in one prior art reference. Henkels & McCoy, Inc. v. Elkin, 455 F.2d 936 (3d Cir. 1972); Fruehauf Corp. v. International Terminal Operating Co., 183 U.S.P.Q. 526 (D. N.J. 1973) aff'd per curiam, 184 U.S.P.Q. 266 (3d Cir. 1974).

10. In determining obviousness under 35 U.S.C. § 103, the definition of prior art set forth in 35 U.S.C. § 102(b) is applicable; any prior art reference which has been published more than one year prior to the December 18, 1974 filing date of the Garcia patent application constitutes a statutory bar reference against the Garcia patent under 35 U.S.C. § 103.

11. Claims of the Garcia patent are invalid because the specific features added to Claim 1 to obtain the patent are disclosed in prior art not considered by the Patent Examiner. Graham v. John Deere, supra; Burland v. Tripp Mfg. Co., supra.

12. Claims of the Garcia patent are invalid because the claimed combination does not result in an effect greater than the several elements taken separately. Sakraida v. Ag Pro, supra; Anderson-Black Rock v. Pavement Salvage Co., supra; Hadco Products, Inc. v. Walter Kidde & Co., supra.

13. Claims of the Garcia patent are invalid under 35 U.S.C. § 103 because the switch defined by the claimed combination is the result of straightforward design efforts; Garcia provided obvious solutions to a series of design problems with which he was confronted.

14. Viewed in light of the prior art existing at the time Garcia made his alleged invention,

any differences between the subject matter of the Garcia patent claims and the prior art are such that the subject matter of the claims would have been obvious at the time the invention was made to a person having ordinary skill in the art of miniature electrical switches, thus rendering the claims invalid under 35 U.S.C. § 103.

II. PLAINTIFF'S PATENT WAS NOT IN PUBLIC USE AND/OR ON SALE MORE THAN ONE YEAR PRIOR TO APPLICATION FOR PATENT.

15. Competitive use or commercial exploitation of a patented device more than one year prior to the filing of the application for a patent comes within the public use and/or on sale bar of 35 U.S.C. § 102(b). Metallizing Engineering Co., Inc. v. Kenyon Bearing & Auto Parts Co., Inc., 153 F.2d 516 (2d Cir. 1946), cert. denied, 328 U.S. 840, 66 S.Ct. 1016, 90 L.Ed.2d 615, rehearing denied, 328 U.S. 881, 66 S.Ct. 1364, 90 L.Ed.2d 1648 (1946); U.S. Chemical Corp. v. Plastic Glass Corp., 243 F.2d 892 (3d Cir. 1957), cert. denied, 355 U.S. 826, 78 S.Ct. 59, 2 L.Ed.2d 47 (1957).

16. Proof of prior public use must be established by evidence that is so clear, convincing and cogent as to admit of no reasonable doubt. Devex Corp. v. General Motors Corp., 321 F.2d 234 (7th Cir. 1963).

17. Defendants have failed to show such a prior public use.

III. PLAINTIFF'S PATENT IS INVALID BECAUSE
THE ORIGINAL APPLICATION FAILED
TO DISCLOSE AN OPERATIVE SWITCH.

18. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, to make and use the same. (35 U.S.C. § 112).

19. Sufficient information must be given by the inventor that one skilled in the art does not have to indulge in experimentation to ascertain how to practice the invention. Fruehauf Corp. v. International Terminal Operating Co., Inc., 183 U.S.P.Q. 526 (D. N.J. 1973), aff'd per curiam, 184 U.S.P.Q. 266 (3d Cir. 1974); Novelart Mfg. Co. v. Carlin Container Corp., 363 F. Supp. 58 (D. N.J. 1973).

20. Claims of the Garcia patent are invalid because the specification and drawings of the original application disclosed a switch which could not be assembled and, if assembled, would not operate satisfactorily, independent design and experiments would be required to produce an operative switch. Novelart Mfg. Co. v. Carlin Container Corp., supra.

21. In original applications, all amendments of the drawings or specifications, and all additions thereto, must conform to at least one of them as it was at the time of the filing of the application. Matter not found in either, involving a departure from or an addition to the original disclosure, cannot be added to the application even though supported by a supplemental oath, and can be shown or claimed only in a separate application. 37 C.F.R. § 1.118; 35 U.S.C. § 132; Young v. U.S., 179 U.S.P.Q. 801 (Ct. Cl. 1973), cert. denied, 419 U.S. 1002, 95 S.Ct. 322, 42 L.Ed.2d 278 (1974); General Instrument Corp. v. Hughes Aircraft Co., 399 F.2d 373 (1st Cir. 1968).

IV. PLAINTIFF WAS NOT GUILTY OF FRAUD
ON THE PATENT OFFICE.

22. Social and economic consequences of a patent monopoly require that the application for patent be free from fraud or other inequitable conduct. Precision Instrument Manufacturing Co. v. Automotive Maintenance Machinery Co., 324 U.S. 806; 65 S.Ct. 993; 89 L.Ed. 1381 (1945).

23. Whether a patentee conforms to the required standards of equitable conduct before the Patent Office is determined from the totality of the circumstances. Monsanto Co. v. Rohm & Haas Co., 456 F.2d 592 (3d Cir. 1972), cert. denied, 407 U.S. 934, 92 S.Ct. 2463, 32 L.Ed.2d 817 (1972).

24. Fraud in a patent case must be shown clearly, unequivocally and convincingly; elements of such fraud are (1) willful wrongful conduct or wrongful intent, and (2) inequitable conduct which is material and relevant; wrongful intent is established by a deliberate misrepresentation, the fact of misrepresentation coupled with knowledge of its falsity, or from gross negligence; materiality is established if the misrepresentation or non-disclosure may have affected the Examiner's thinking or decision. In re Frost, 398 F. Supp. 1353 (D. Del. 1975), modified on other grounds, 540 F.2d 601 (3d Cir. 1976).

25. As I have stated in my Findings of Fact, I find that the plaintiff's conduct did not constitute fraud on the Patent Office.

V. DEFENDANTS' SWITCHES DO NOT INFRINGE CLAIMS OF GARCIA PATENT.

26. A party asserting a patent bears the burden of proving infringement by a preponderance of the evidence. Fruehauf Corp. v. International Terminal Co., Inc., supra; Novelart Manufacturing Co. v. Carlin Container Corp., supra.

27. To establish infringement, particularly of a combination patent, each element in the allegedly infringed claim must be found in the accused structure. Q-Tips, Inc. v. Johnson & Johnson, 207 F.2d 509 (3d Cir. 1953), cert. denied,

347 U.S. 935, 74 S.Ct. 630, 98 L.Ed. 1086 (1954); Fruehauf Corp. v. International Terminal Operating Co., Inc., supra.

28. While AMF's RCL DIP switch has "axially aligned" terminal arms like the Garcia patent, its arms are rigid or fixed, unlike the Garcia patent. Thus, there is no infringement.

VI. PLAINTIFF HAS NOT COMPETED UNFAIRLY WITH DEFENDANTS.

29. A patent owner acting in bad faith for the purpose of damaging another's business rather than in good faith for the lawful purpose of protecting his patent rights is liable for unfair competition. A. B. Farquhar Co. v. National Harrow Co., 102 Fed. 714 (3d Cir. 1900); Adriance, Platt & Co. v. National Harrow Co., 121 Fed. 827 (2d Cir. 1903); Zephyr American Corp. v. Bates Mfg. Co., 59 F. Supp. 573 (D. N.J. 1945).

30. A patent owner has a right to notify persons suspected of infringement of the existence of his claim. A good faith belief that a patent is being infringed followed by filing a lawsuit in good faith is a defense to a charge of unfair competition. Anchor Plastics Co., Inc. v. Dynex Industrial Plastics Corp., supra; Airtex Corp. v. Shelley Radiant Ceiling Co., 536 F.2d 145, 115-156 (7th Cir. 1976).

31. Plaintiff has not competed unfairly with the defendants.

VII. THE ANTITRUST COUNTERCLAIM.

32. Good faith in the prosecution of a patent application is a complete defense to an action asserting violation of Section 2 of the Sherman Act. 15 U.S.C. § 2; Walker Process Equipment Co. v. Food Machinery & Chemical Corp., 382 U.S. 172 (1965).

33. Defendants have failed to prove that plaintiff violated the antitrust laws.

VIII. ATTORNEY FEES.

34. The court, in exceptional cases, may award reasonable attorneys' fees to the prevailing party. 35 U.S.C. § 285.

35. This was not an exceptional case; therefore, defendants are not awarded attorneys' fees.

36. Any conclusion of law entered herein which may be construed in whole or in part as a finding of fact shall be so deemed and treated as if set forth as a finding of fact.

The parties are directed to submit an appropriate form of judgment within 15 days hereof.

s/ Frederick B. Lacey
United States District Judge

Dated: December 28, 1977